ORDER NO. AD9502032C1
A2

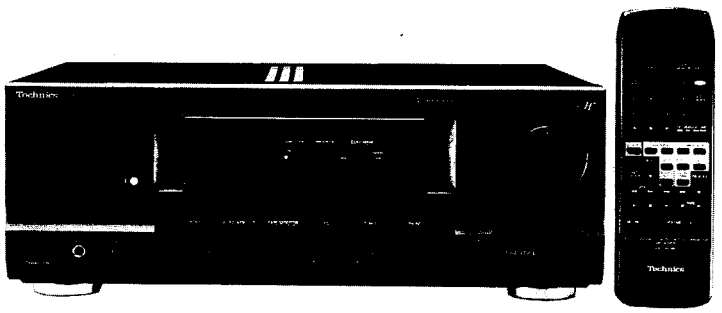
Service Manual

AV Control Stereo Receiver

DOLBY SURROUND PRO • LOGIC

Receiver

SA-GX690



Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(P)	U.S.A.	(K)
(PC)	Canada.	

* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionnally licensed under one or more of the following patents: U.S. numbers 3,632,886, 3,746,792 and 3,959,590; Canadian numbers 1,004,603 and 1,037,877.
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SPECIFICATIONS (IHF'78)

■ AMPLIFIER SECTION

Rated minimum sine wave
RMS power output
20Hz–20kHz both channels driven
0.05% total harmonic distortion
100W per channel (8Ω)

1kHz continuous power output both channels driven	
0.05% total harmonic distortion	105W per channel (8Ω)
Total harmonic distortion	
rated power at 20Hz–20kHz	0.05% (8Ω)
half power at 1kHz	0.03% (8Ω)
Power output at the Dolby Pro Logic operation	
0.8% at 1kHz, Front	2×100W (8Ω)
Center	100W (8Ω)
Surround	100W (8Ω)
Low frequency damping factor	30 (8Ω)
Load impedance	
Front	
A or B	4–8Ω
A and B	8Ω
Center	8Ω
Surround	4–8Ω
Dynamic headroom	2dB (8Ω)
SMPTE intermodulation distortion	0.3% (8Ω)
Frequency response	
PHONO	RIAA standard curve ±0.8dB
CD, VCR 1, VCR 2/VIDEO CD, TAPE	7Hz–70kHz, ±3dB
Input sensitivity	
PHONO	0.4mV (3mV, IHF '66)
CD, VCR 1, VCR 2/VIDEO CD, TAPE	27mV (200mV, IHF '66)
S/N (IHF A)	
PHONO	70dB (80dB, IHF '66)
CD, VCR 1, VCR 2/VIDEO CD, TAPE	75dB (85dB, IHF '66)
Input impedance	
PHONO	47kΩ
CD, VCR 1, VCR 2/VIDEO CD, TAPE	22kΩ
Tone controls	
BASS	50Hz, +10 to −10dB
TREBLE	20kHz, +10 to −10dB
Loudness control (Volume at −30dB)	50Hz, +9dB

■ FM TUNER SECTION

Frequency range	87.9–107.9MHz
Sensitivity	11.2dBf (2μV, IHF '58)
50dB quieting sensitivity	
MONO	18.3dBf (4.5μV, IHF '58)
STEREO	38.3dBf (45μV, IHF '58)
Total harmonic distortion	
MONO	0.2%
STEREO	0.3%
S/N	
MONO	75dB
STEREO	70dB
Frequency response	20Hz–15kHz, +1dB, −2dB
Alternate channel selectivity	65dB
Capture ratio	1dB
Image rejection at 98MHz	45dB
IF rejection at 98MHz	80dB
Spurious response rejection at 98MHz	75dB
AM suppression	50dB
Stereo separation	
1kHz	40dB
10kHz	30dB
Carrier leak	
19kHz	−35dB
38kHz	−50dB
Antenna terminal(s)	75Ω (unbalanced)

Technics®

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

■ AM TUNER SECTION

Frequency range	530−1710kHz
Sensitivity	20μV, 330μV/m
Selectivity	55dB
Image rejection at 1000kHz	40dB
IF rejection at 1000kHz	60dB

■ VIDEO SECTION

Output voltage at 1V input (unbalanced)	1±0.1Vp-p
Maximum input voltage	1.5Vp-p

■ GENERAL

Power consumption	280W, 365VA (In standby condition: 2W)
Power supply	AC 120V, 60Hz
Dimensions (W×H×D)	430×158×352mm (16-15/16″×6-7/32″×13-27/32″)
Weight	9.8kg (21.6lb.)

■ REMOTE CONTROL TRANSISMITTER

Control keys	58 keys
Dimensions (W×H×D)	70×28×215mm (2-3/4″×1-3/32″×8-15/32″)
Weight (including batteries)	160g (4.8 oz.)
Power source	Two "AAA" (R03/UM-4)

Notes:

1. Design and specifications are subject to change without notice. Weight and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

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■ PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are " shorted", or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

■ BEFORE REPAIR AND ADJUSTMENT

Disconnect AC power, Discharge both Power Supply Capacitors C703 and C704 (75V 7500μF) C705 and C706 (50V 3300μF) through a 10Ω, 5W resistor to ground. DO NOT SHORT-CIRCUIT DIRECTLY (with a screwdrive blade, for instance), as this may destroy solid state devices. After repairs are completed, restore power gradually using a variac, to avoid overcurrent.

Current consumption at 120V, 60Hz in NO SIGNAL mode should be 400~1000mA.

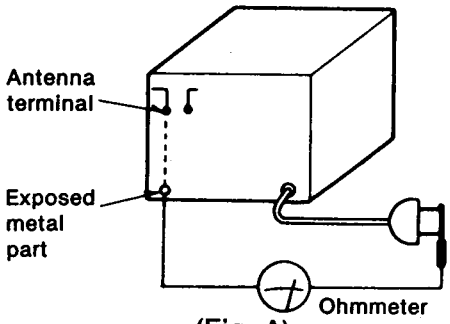
■ SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

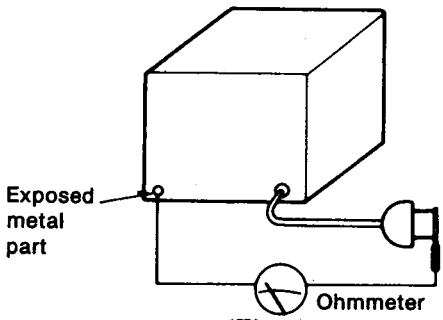
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads, control shafts, handle brackets, etc. Equipment with exposed metal part terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without exposed metal part terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance=3MΩ–5.2MΩ



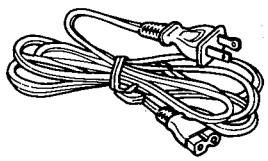
(Fig. B)

Resistance=Approx. ∞

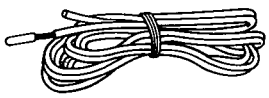
4. If the measurement is outside the specified limits, there is a possibilty of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ ACCESSORIES

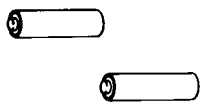
AC power supply cord (SJA172) ..... 1 pc.



FM indoor antenna (RSA0006)..... 1 pc.

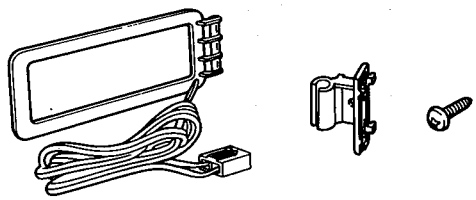


Batteries ("AAA"/R03)..... 2 pcs.



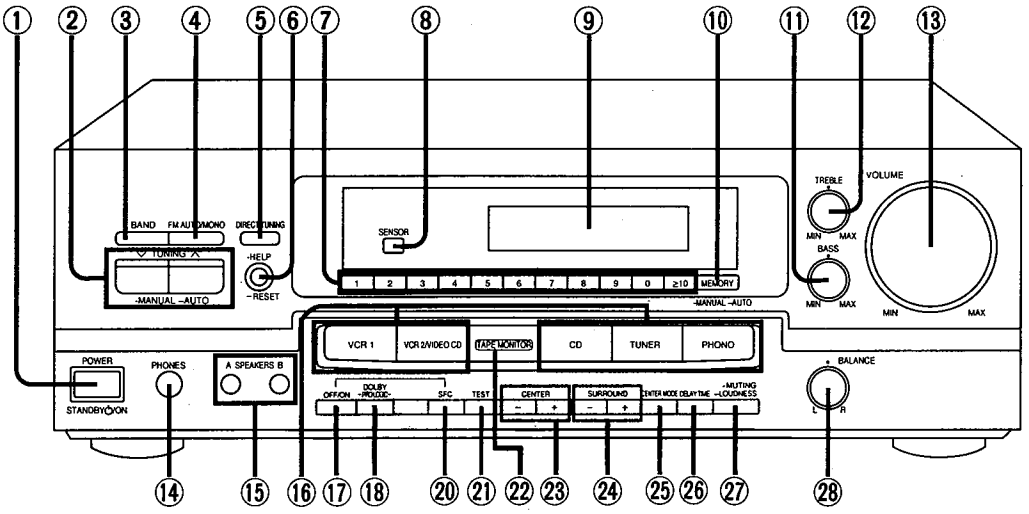
Note: There are available on sale route.

AM loop antenna set (RSA0010)..... 1 pc.
- AM antenna holder (RMN0244)..... 1 pc.
- Screw (XTN3+12AFZ)..... 1 pc.



Remote control transmitter (RAK-SA603MH).... 1 pc.

■ FRONT PANEL CONTROLS



No.	Name
①	Power switch (POWER)
②	Tuning control (TUNING)
③	Band select button (BAND)
④	FM mode select button (FM AUTO/MONO)
⑤	Direct tuning button (DIRECT TUNING)
⑥	Help/reset button (-HELP −RESET)
⑦	Numeric buttons (1−0, ≥10)
⑧	Remote control signal receptor
⑨	Display
⑩	Memory button (MEMORY)
⑪	Bass control (BASS)
⑫	Treble control (TREBLE)
⑬	Volume control (VOLUME)
⑭	Headphone jack (PHONES)
⑮	Speaker select buttons (SPEAKERS)
⑯	Input select buttons
⑰	DOLBY PRO LOGIC/SFC OFF ON button (OFF/ON)

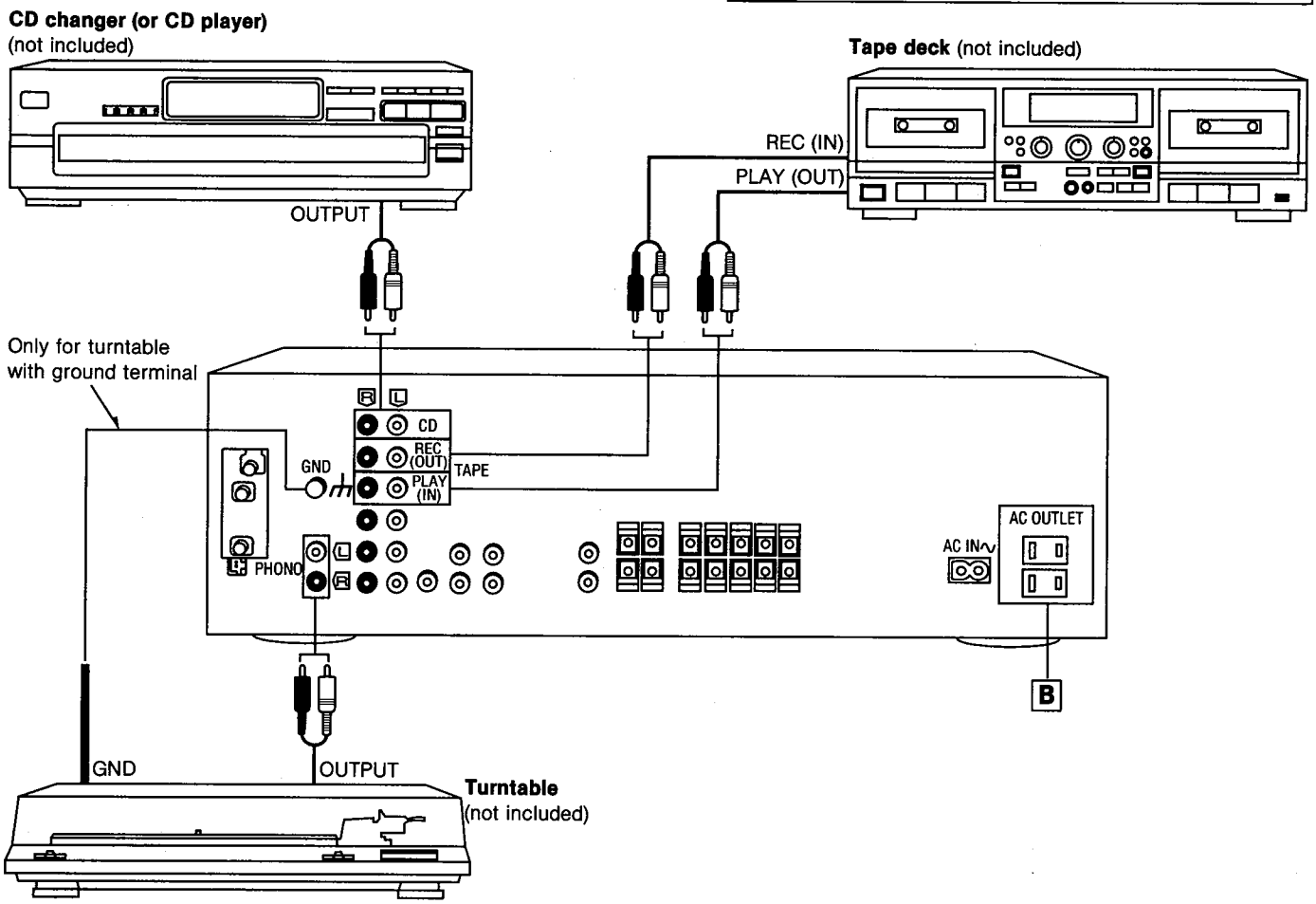
No.	Name
⑱	DOLBY PRO LOGIC mode select button (PRO LOGIC)
⑳	SFC mode select button (SFC)
㉑	Test signal ON/OFF button (TEST)
㉒	Tape monitor button (TAPE MONITOR)
㉓	Center level adjust button (CENTER)
㉔	Surround level adjust button (SURROUND)
㉕	Center mode select button (CENTER MODE)
㉖	Delay time adjust button (DELAY TIME)
㉗	Muting/loudness button (-MUTING −LOUDNESS)
㉘	Balance control (BALANCE)

■ EQUIPMENT CONNECTIONS

Connecting audio equipment

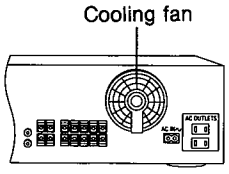
Stereo connection cable (not included)
White (L)
Red (R)

Note
Do not place books, etc., on top of this unit or block the heat radiation vents in any way.

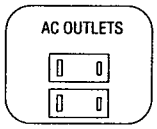


Cooling fan

The cooling fan operates at high power output levels only.

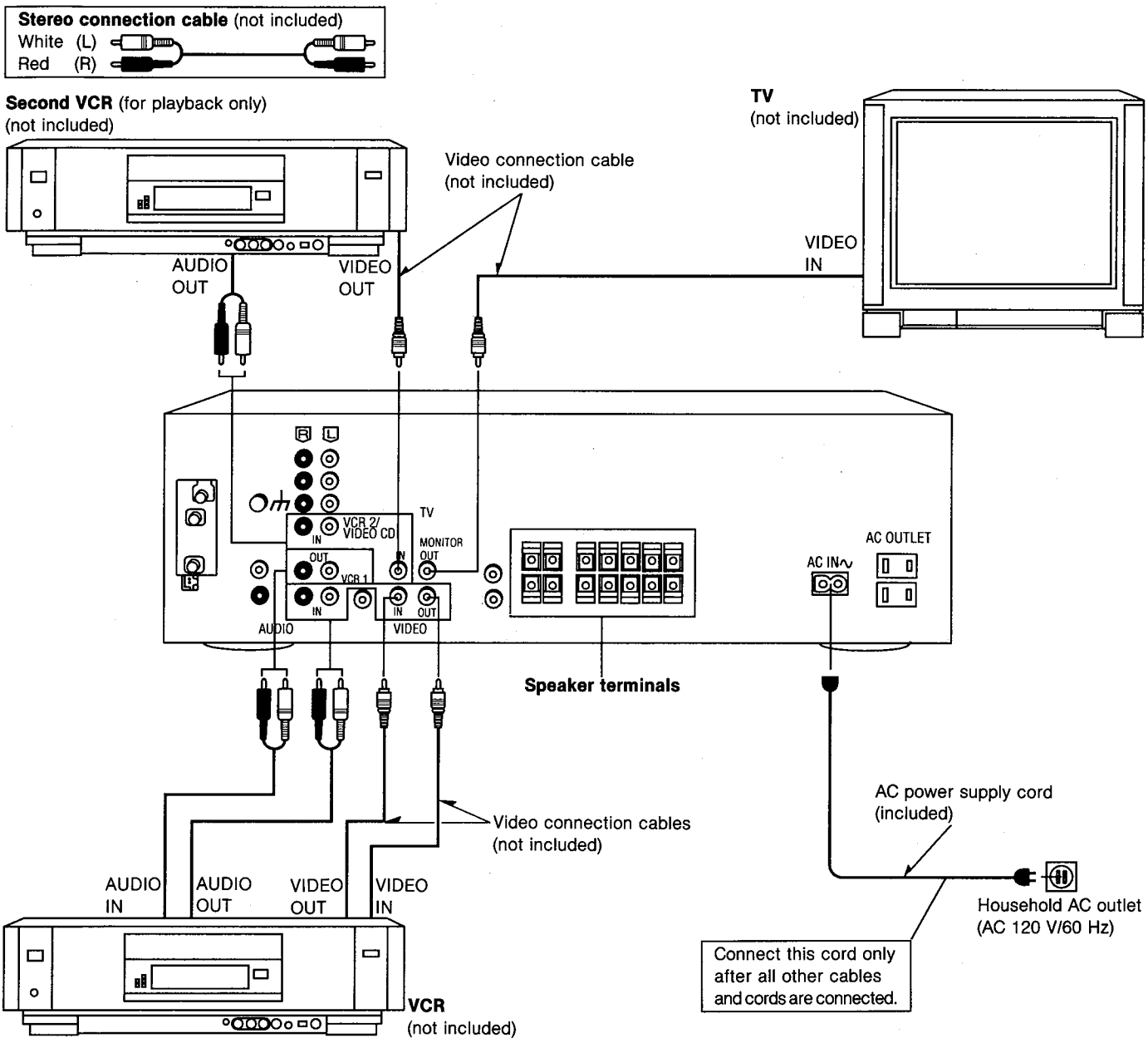


B "SWITCHED" AC outlet(s)



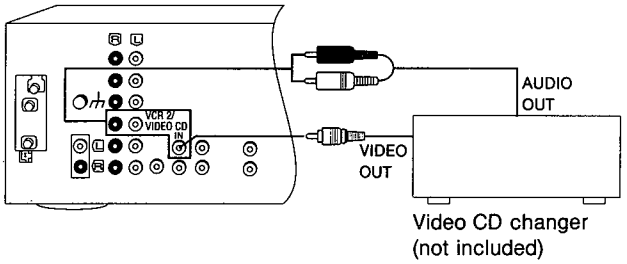
Power to these outlets is controlled by the power switch of this unit. Audio equipment rated up to the indicated power ratings can be connected here.

Connecting video equipment



Connecting a video CD changer

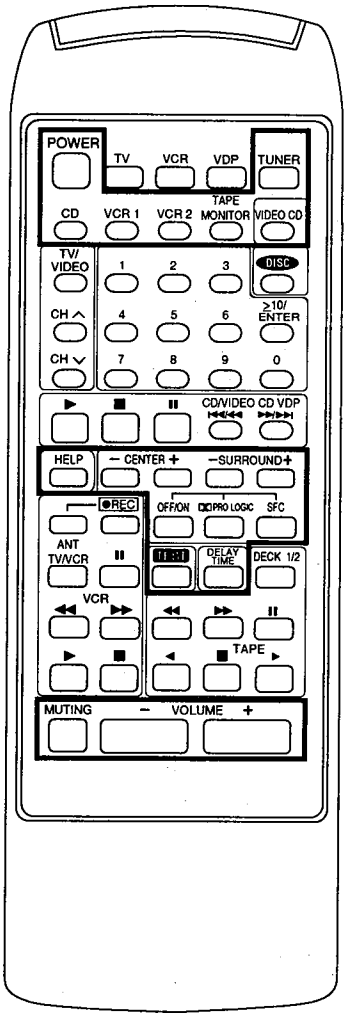
Connect the video CD changer to the "VCR 2/VIDEO CD" terminals.



■ REMOTE CONTROL OPERATION

This remote control transmitter can be used to operate other units manufactured by this company in addition to the system components you have purchased, including TVs and VCRs manufactured since 1985, video CD changers, and laser disc players.

To operate the receiver



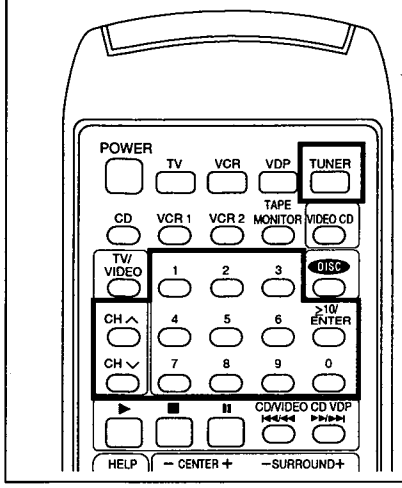
Basic operations

To turn the power supply ON/OFF	TUNER → POWER. Once the power has been set to ON, it can be turned ON and OFF simply by pressing POWER.
To select an input source	TUNER, CD, VCR 1, VCR 2, TAPE MONITOR, VIDEO CD *Note* • PHONO can not be selected with this remote control. • Selecting TAPE MONITOR turns ON the tape monitor function. Pressing it again or another input select button turns the function OFF.
To turn on the Dolby Pro Logic and select the desired mode	□□PRO LOGIC. Changes as follows each time the button is pressed. SURROUND ⇄ 3 STEREO
To turn on the SFC function and select the desired mode	SFC. Changes as follows each time the button is pressed. HALL → LIVE → THEATER → SIMULATED → HALL
To output a test signal	When the 3 STEREO or SURROUND mode is ON TEST Press once more to stop the test signal.
To adjust the output level of the center speaker	When the SURROUND or 3 STEREO mode is ON – CENTER + *Note* Output level cannot be changed when the surround mode is ON and the center mode is on PHANTOM.
To adjust the output level of the surround speakers	When the SURROUND or SFC mode is ON – SURROUND+
To turn the Dolby Pro Logic/SFC OFF and ON	OFF/ON
To display simple receiver information and procedures for remedying trouble	HELP
To adjust the delay time	When the SURROUND or SFC mode is ON DELAY TIME
To mute the sound level	MUTING. The message "MUTING ON NOW" runs repeatedly from right to left across the display as long as the muting function is on. Press once more to return to the original volume.
To adjust the volume level	– VOLUME +

Note

After turning the power of the TV, VCR or laser disc player ON or OFF always press TUNER before pressing POWER when turning the power of the receiver ON and OFF.

To operate the receiver (continued)



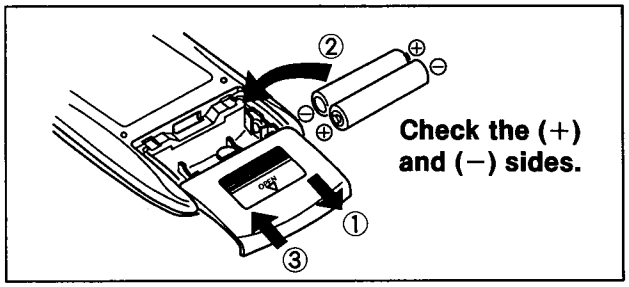
To listen to radio broadcasts

To switch the remote control transmitter to tuner operation mode	TUNER — The input source for the receiver will switch to the tuner, and operation of the buttons listed below will be possible.
To select the desired channel sequentially	CH ∧ / CH ∨ — Select the desired preset channel.
To select the desired channel directly	(Example: Channel 9) 9 (Example: Channel 12) ≥10/ENTER → 1 → 2

■ BEFORE USE

Battery installation

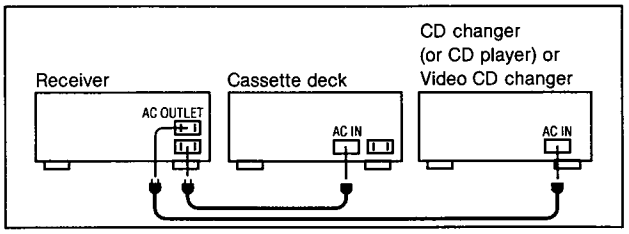
Insert the batteries included with this unit as shown below.



When you need to replace these batteries
Use two UM-4 "AAA", IEC R03 (1.5 V) or equivalent batteries.

Connecting power cords

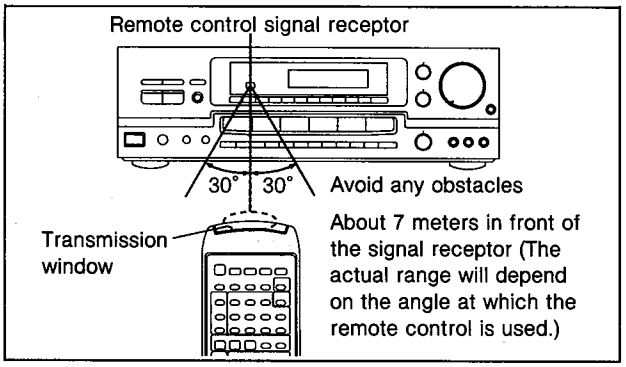
If the power cords of the CD changer (or CD player) or video CD changer and cassette deck are connected as shown below and the power switches of each unit are set to ON, the power supply for each unit will simultaneously turn ON and OFF when the power supply of the receiver is turned ON and OFF.



Note that regarding the power cords of the TV, VCR and laser disc player, connect them to the household AC outlet.

Method for use

Use the remote control within 60 degrees and within 7 meters (23 ft.) facing toward the receiver's remote control signal receptor.


Remote control signal receptor
30°
30°
Avoid any obstacles
Transmission window
About 7 meters in front of the signal receptor (The actual range will depend on the angle at which the remote control is used.)

Note

Be sure the transmission window and the signal receptor are free from dust. Excessive dust might affect performance.

The operation may not be correct if direct sunlight or another strong light source strikes the signal receptor of this unit. If there is a problem, place the unit away from the light source.

When operating a TV, VCR, laser disc player or other audio equipment with a signal receptor, face this remote control toward the signal receptor of the unit to be operated.

■ OPERATION CHECKS AND MAIN COMPONENT REPLACEMENT PROCEDURE

NOTE

1. **This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.**
2. **For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
3. **Select items from the following index when checks or replacement are required.**
4. **Illustrated screws are equivalent to actual size.**
5. **Refer the parts No. on the page of "Main component Replacement Procedures", if necessary.**

• Contents

•Checking Procedure for each P.C.B. Page.

1.Checking for the FL P.C.B., Tuner P.C.B. and IN/OUT terminal P.C.B. ..... 9.

2.Checking for the Main P.C.B. ..... 10,11.

•Main Component Replacement Procedures

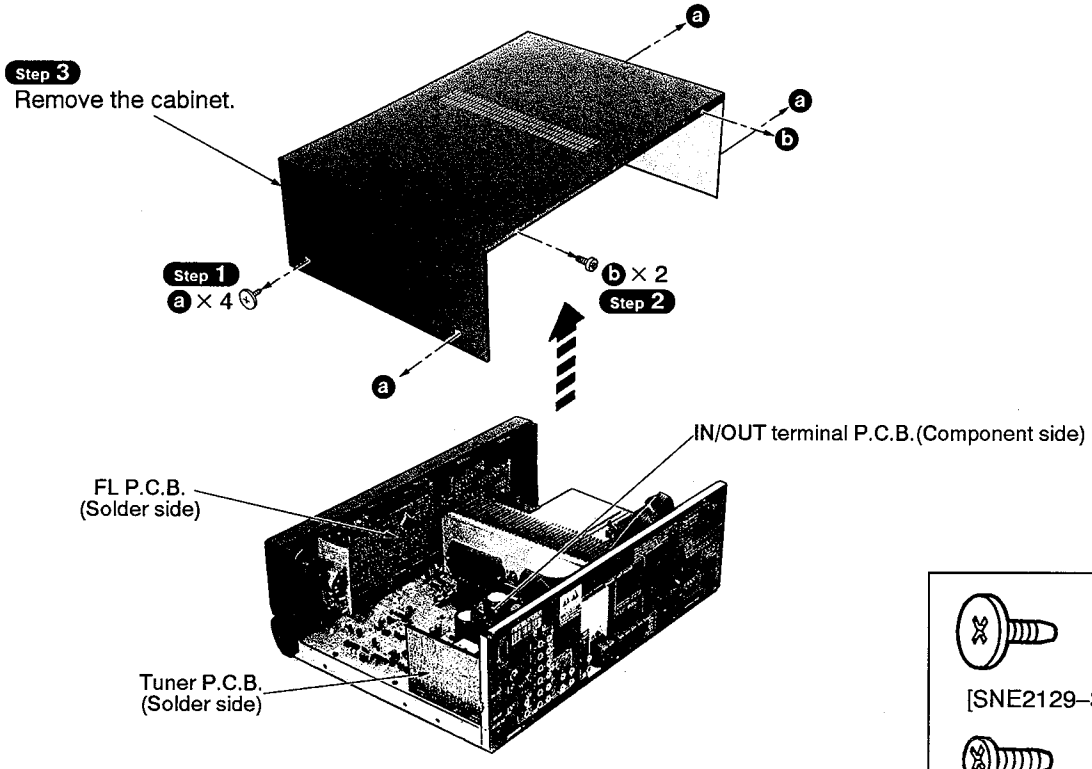
1.Replacement for the foot. ..... 12.

2.Replacement for the power IC and regulator transistor. ..... 12~14.

3.Replacement for the fan motor. ..... 14.

■ Checking Procedure for each P.C.B.

1. Checking for the FL P.C.B., tuner P.C.B. and IN/OUT terminal P.C.B.

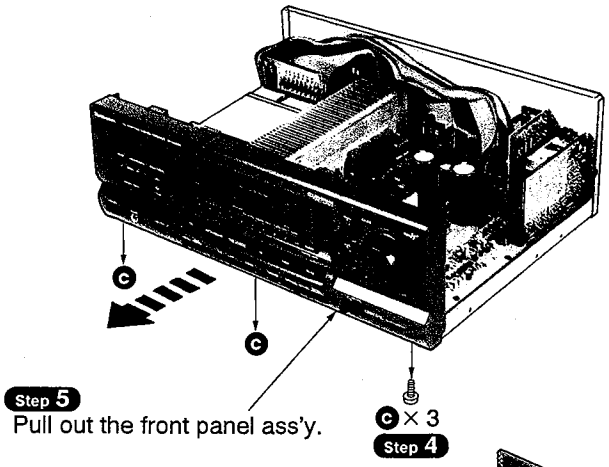


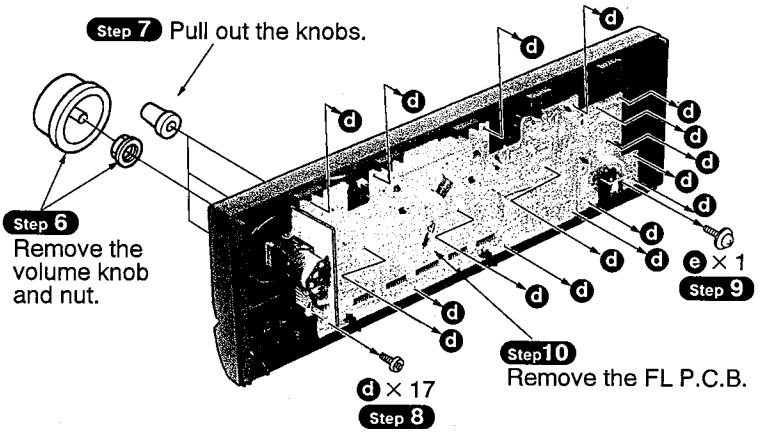
ⓐ [SNE2129–3] (Black)

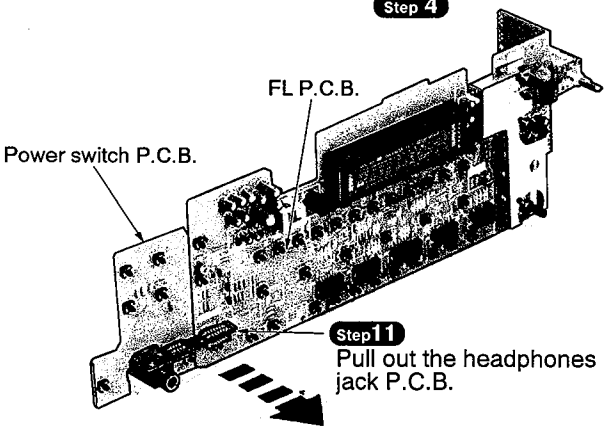
ⓑ [XTBS3+8JFZ1] (Black)

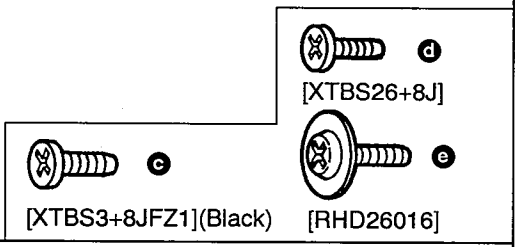
• Check the FL P.C.B., tuner P.C.B. and IN/OUT terminal P.C.B. as shown above.

To remove each P.C.B.

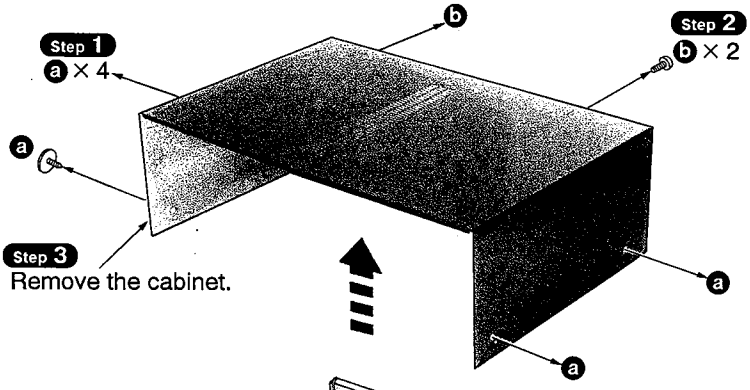


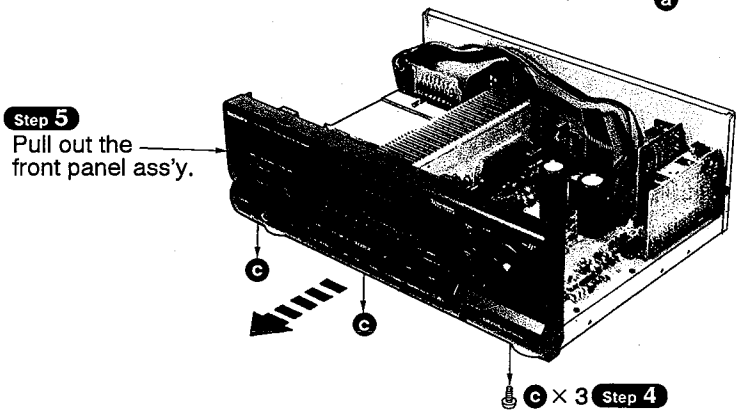


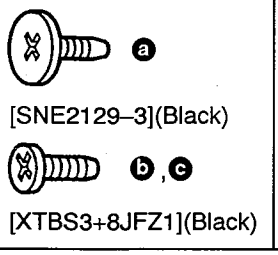


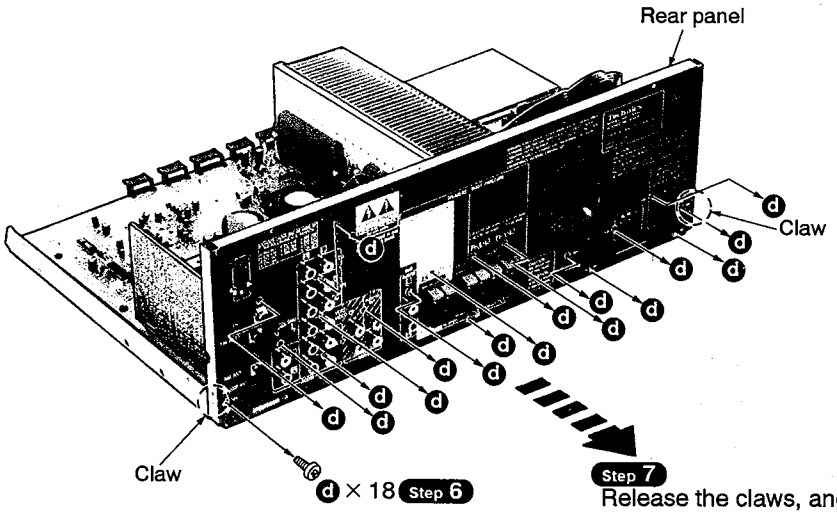


2. Checking for the main P.C.B.

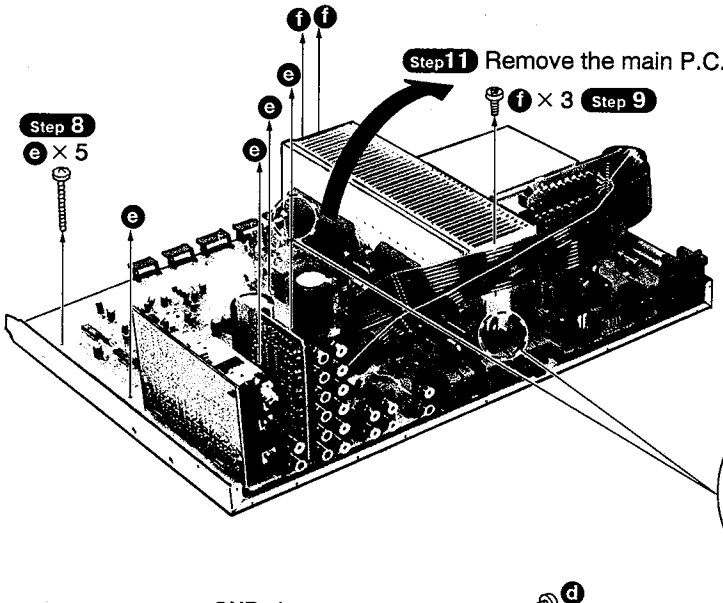




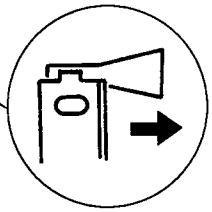




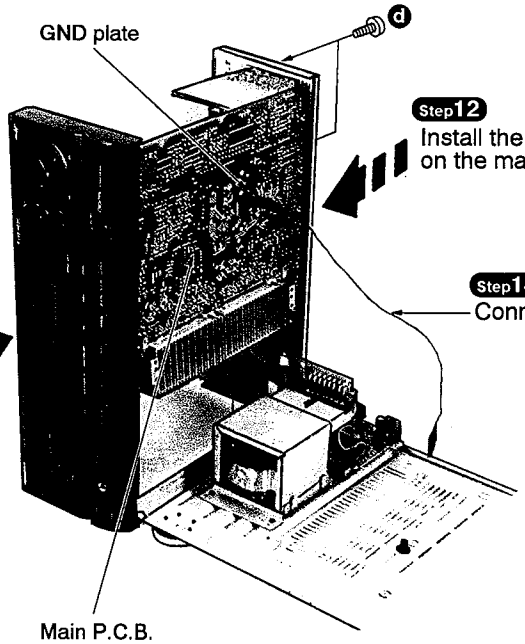
Step 7
Release the claws, and then remove the rear panel.



Step10
Release the hooks.



- **Check the main P.C.B. as shown below.**

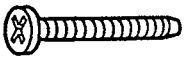


Step12
Install the rear panel temporarily on the main P.C.B. again.

Step14
Connect the lead wire.

Step13
Connect the front panel ass'y of the P.C.B. connectors to the main P.C.B. and set it as the illustration right.

[XTBS3+8JFZ1](Black)

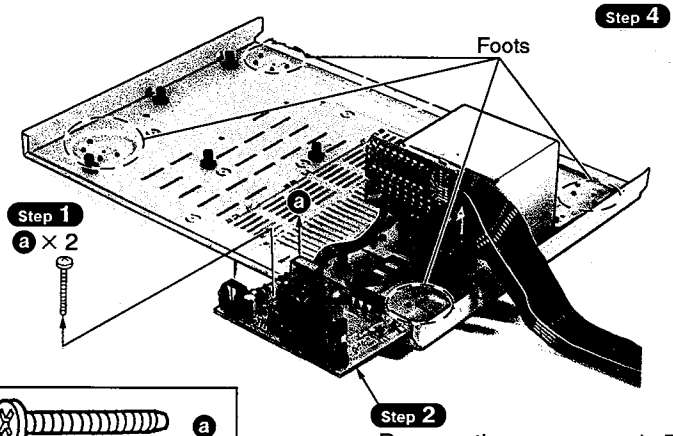

[XTB3+20JFZ](Black)

[XTB3+8JFZ](Black)

■ Main Component Replacement Procedures

1. Replacement of the foot

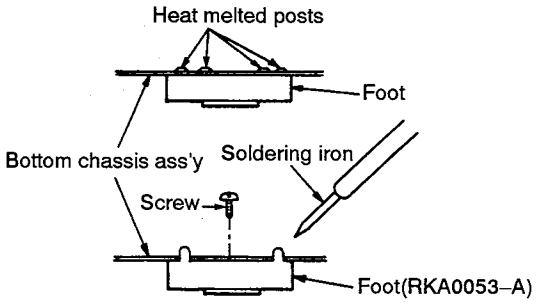
• Follow the Step 1 ~ Step 12 in item 2 on checking procedure for each P.C.B. on pages 10 and 11.

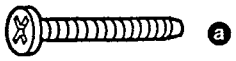


Step 2 Remove the power supply P.C.B.

Step 3 Remove the 4 heat melted posts on the Bottom chassis ass'y with a pair of nippers or similar tool.

Step 4 To replace the foot(RKA0053–A) on the Bottom chassis ass'y melt the 4 posts with a soldering iron or install it with a screw (XTB3+6J).



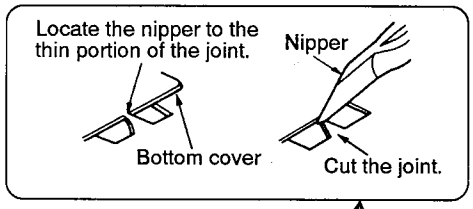


ⓐ [XTB3+20JFZ](Black)

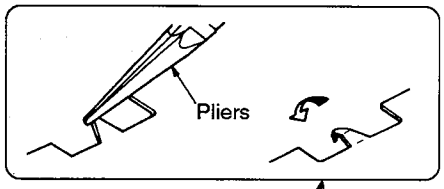
2. Replacement for the power IC and regulator transistor

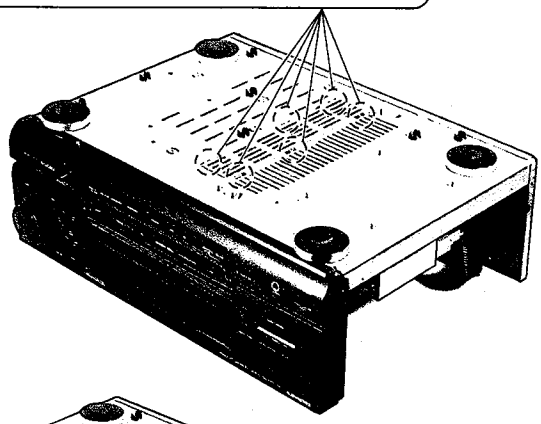
• Follow the Step 1 ~ Step 3 in item 1 on checking procedure for each P.C.B. on page 9.

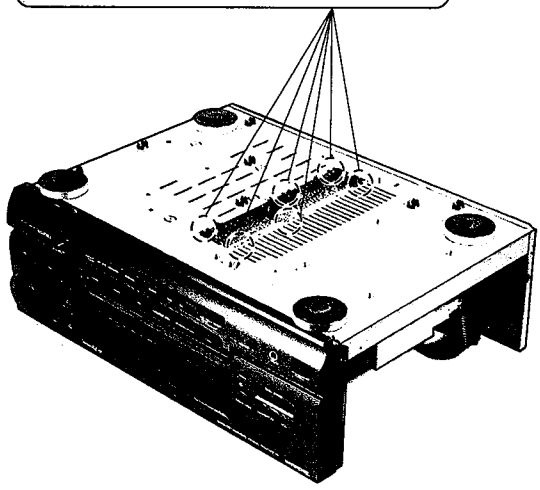
Step 1 Cut the joints as shown below.(6 portions)

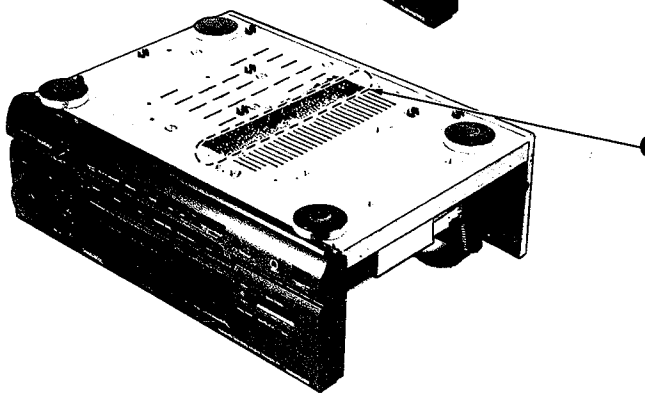


Step 2 Fold the joints.(6 portions)



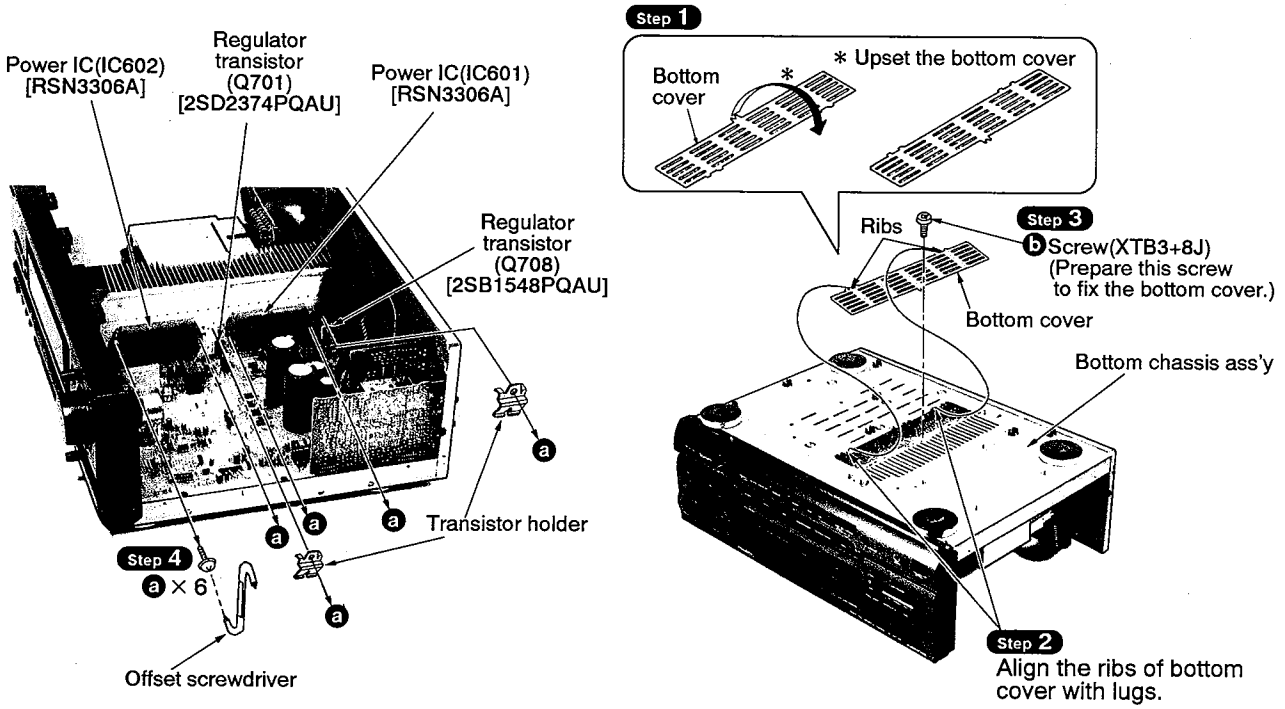






Step 3 Unsolder the terminals of power IC and regulator transistor.

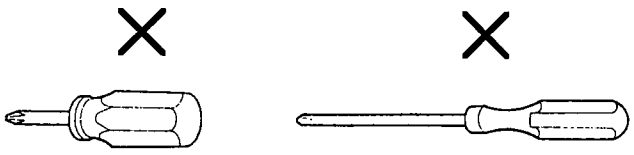
Installation of the bottom cover after replacement



CAUTION

1. After replceing the power IC or regulator transistor,apply a sufficient quantity of compound grease (RFKX0002) between the heat sink and the power IC or regulator transistor (Radiation of power IC).
2. Tighten enough the screws (ⓐ) after replacing the power IC and regulator transisitor. Otherwise, the heat rabiation works little.
3. When installing or removing the power IC or transistor holder, be sure to use an offset screwdriver.

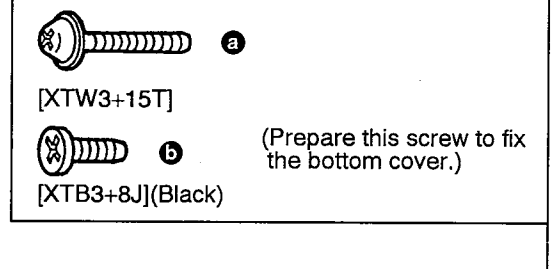
- A long straight screwdriver canniot be used for removal or mounting since its long grip interferes wiht the neighboring P.C.B.(See Fig.1)
- A short straight screwdriver may be used for removal, but cannot be used for mounting because the limited space in the unit will not allow sufficient tightening torque. (See Fig.2)



A short straight screwdriver A long straight screwdriver

Fig.2

- Insufficient tightening will cause poor heat dissipation from the power IC and regulator transistor and, in the worst case, may lead their thermal breakdown. (See Fig.2)



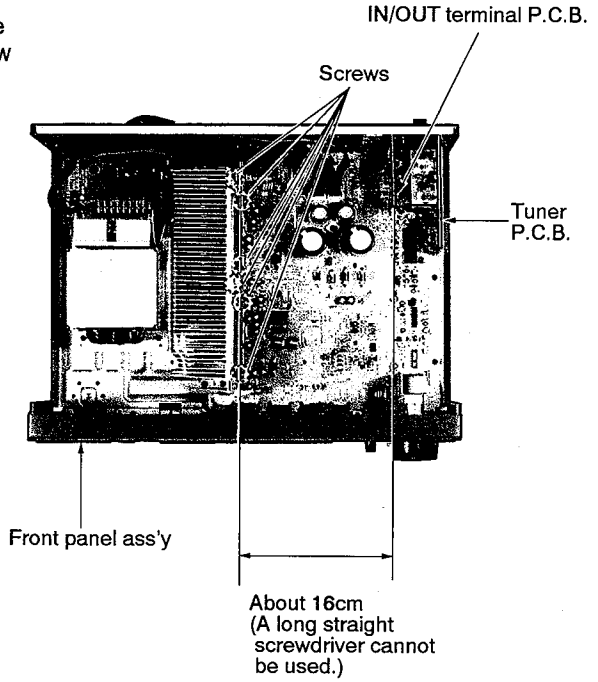
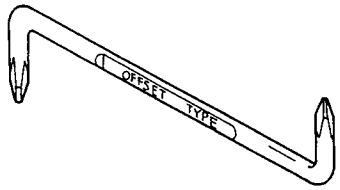


Fig.1

——OFFSET SCREWDRIVER——

• The PROTO offset screwdriver No.34-¼ is recommended for use in the application above.



No.	⊕	⟵ L ⟶
34¼	1 & 2	4¾"

• The address of PROTO International Sales is as follows.

PROTO®

International Sales

International Sales Office
Stanley-Proto Industrial Tools
14117 Industrial Park Blvd.
Covington, GA 30209 U.S.A.
Fax: 706-786-4387
Phone: 706-787-3800

Australia, New Zealand & South Pacific
Stanley-Proto Industrial Tools
P.O.Box 10
400 Whitehorse Road
Nunrweding 3131
Victoria, Australia
Fax: 61-3-894-1173
Phone: 61-3-878-9244

Singapore, Indonesia, Philippines, Korea, Hong Kong, Malaysia, China.
Stanley-Proto Asia Pacific
12 Gul Drive
Singapore 2262
Fax: 65-861-3206
Phone: 65-862-0883

Thailand
Stanley-Proto Thailand Ltd.
1017 Moo 13 Bangnatrad Highway, Tambol Bankaew
Amphur Bangplee
Samutprakarn, Thailand
Fax: 66-2-316-6071
Phone: 66-2-316-8655

Japan
Stanley Works Japan
2-7-16 Hyakunin-Cho
Shinjuku-ku
Tokyo 160 Japan
Fax: 81-3-3360-8456
Phone: 81-3-3360-8458

Mexico
Herramientas Stanley S.A. DE C.V.
Apartado Postal 675
72030 Puebla, Pue, Mexico
Fax: 52-22-494-4880
Phone: 52-22-495-300

South & Central America, Puerto Rico, The Caribbian
Stanley Inter-America
2101 N.W. 84th Ave.
Miami, Florida 33122
Fax: 305-594-4261
Phone: 305-591-3828

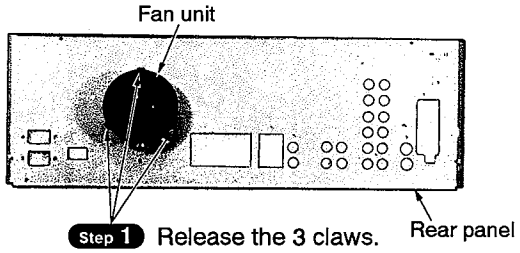
Europe
Stanley-Proto Europe
Woodside, Sheffield
539PD
England
Fax: 44-742-739-038
Phone: 44-742-768-888

Canada
Stanley-Proto Canada
1100 Corporate Drive
Burlington, Ontario
Canada, L7L 5R6
Fax: 416-335-0075
Phone: 416-335-0075

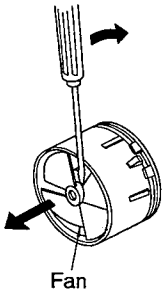
Middle East, Mediterranean & Africa
Stanley-MEMA
Cory House The Ring
Bracknell Berkshire
RG 12 1A2
England
Fax: 44-344-485-526
Phone: 44-344-51813

3. Replacement for the fan motor

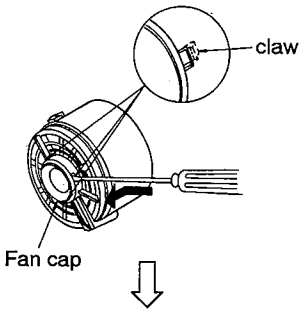
• Follow the Step 1 ~ Step 7 in item 2 on checking procedure for each P.C.B. on page 11.



Step 2
Put a screwdriver at the root of the fan and remove it.

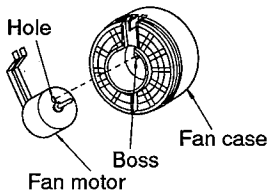


Step 3
Remove the fan cap.

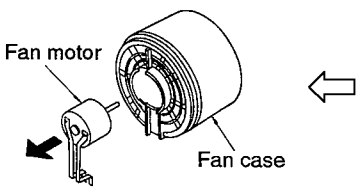


NOTE

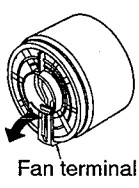
When replacing the fan motor, align the boss of the fan case with the hole of the fan motor.



Step 5
Remove the fan motor.



Step 4
Remove the fan terminal cap.



■ FAN MOTOR TROUBLESHOOTING

The Model SA-GX690 employ fan motor error sensing electronics.
If the cooling fan is not operation and "OVER LOAD" is displayed on the FL display, check the fan motor and its driving circuit.

"OVER LOAD" is displayed on the FL display.

Is the air cooling path blocked or the fan motor jammed by any external obstacle?
YES → Remove the obstacle.
NO

Remove the fan from the unit.

Is the fan motor's DC resistance 20~30Ω?
NO → Fan motor failure
Short circuit: DC resistance below 5Ω
Open circuit: DC resistance over 1kΩ
YES

Reinstall the fan on the unit.

Are the terminal voltage of Q772 and Q773 normal in both active and inactive states of the fan motor? (see table1.)
NO → Check the integrity of Q771, Q772, Q773 and the fan motor driving circuit. (see fig. 1.)
YES

(Voltage table)

		fan. off	fan. on
Q771	E	0V	0V
	C	−0.9V	0V
	B	0V	−0.9V
Q772	E	0V	0V
	C	0V	−9.3V
	B	−0.9V	0V
Q773	E	0V	−8.1V
	C	−14.5V	−14.5V
	B	0V	−8.7V

(Table 1)

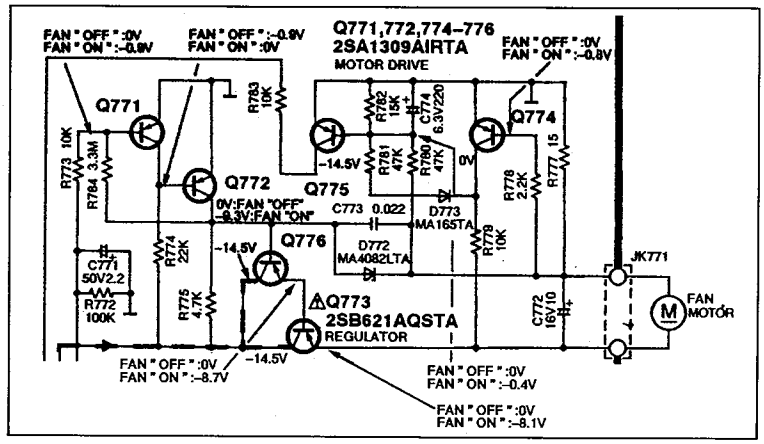


fig. 1

Is an audio signal present at pins ⑦ and ⑩ of IC601 or pins ⑦ and ⑩ of IC602
NO → The power IC (IC601 or IC602) is defective.
YES

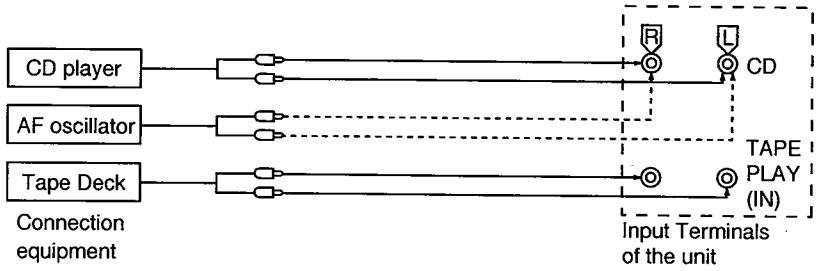
The fan motor, power ICs and fan driver are functioning normally.

■ TROUBLESHOOTING

This unit has test terminals on each circuit board block for use in troubleshooting.

CONNECTION

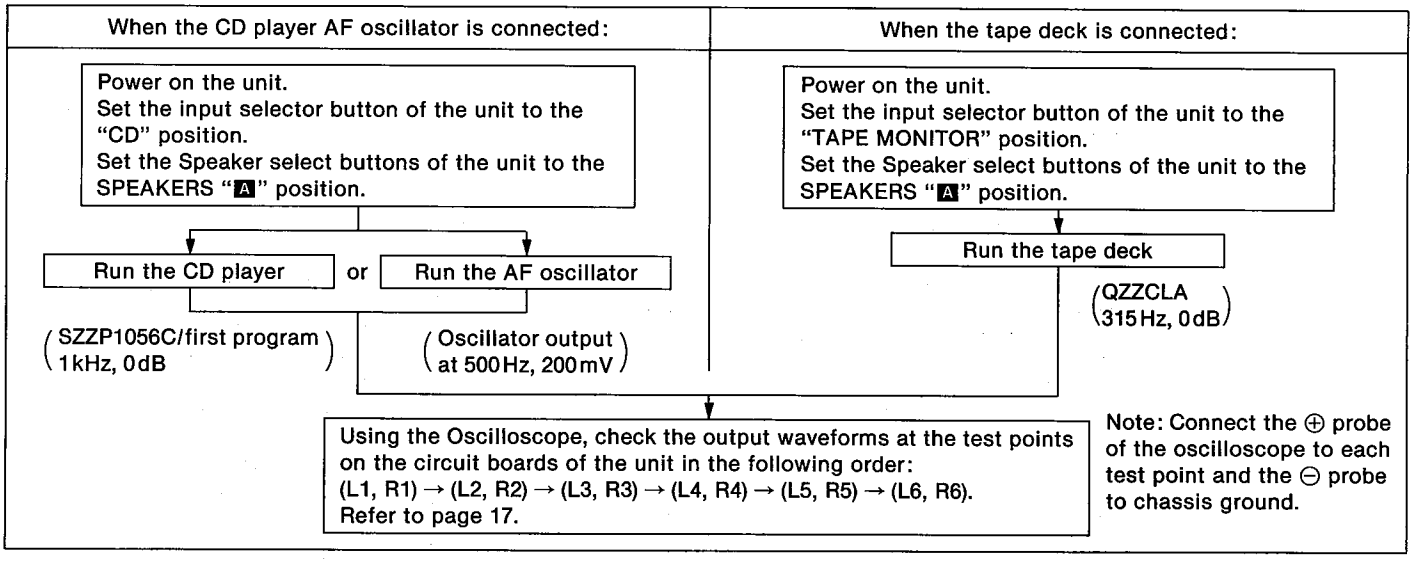
Connect either a CD player, tape deck or AF oscillator to the input terminals of the unit.



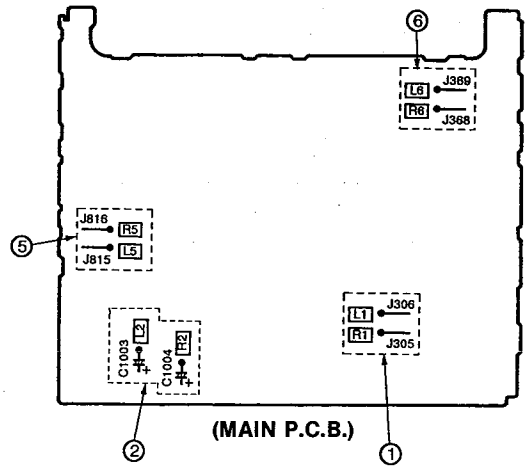
REQUIRED ITEMS

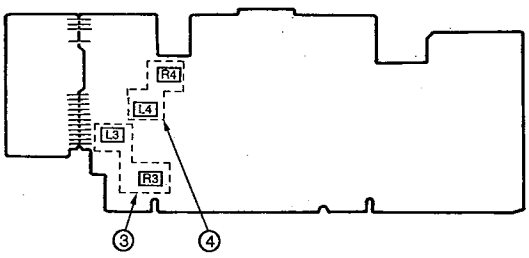
① Testing with a CD player ——— Test deck (SZZP1056C/first pragram, 1kHz, 0dB)
② Testing with a tape deck ——— Test tape (QZZCLA/315Hz, 0dB)
③ Testing with a AF oscillator ——— Set the output at 500Hz, 200mV
④ Oscilloscope (min. 10MHz) ---------- To measure the output waveform at the test points.

TEST PROCEDURE FOR AMPLIFIER CIRCUIT

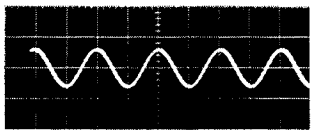
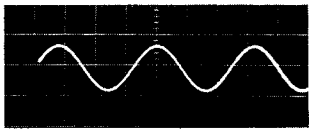
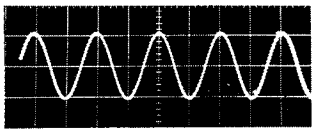
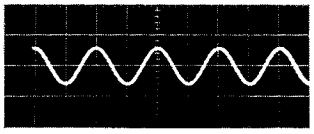
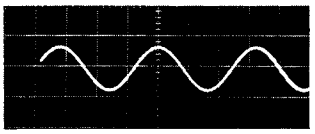
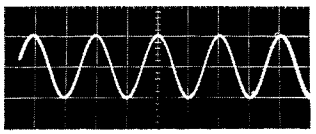
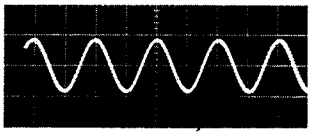
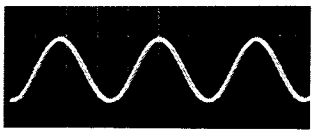
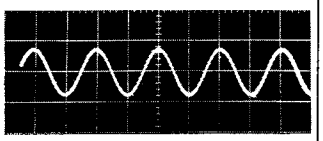
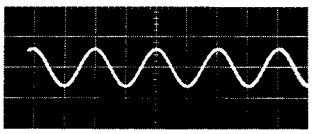
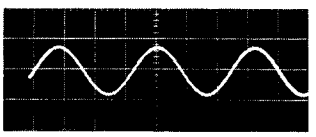
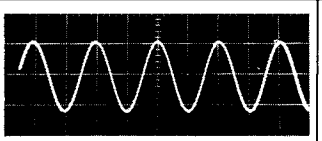
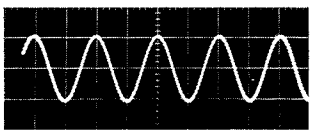
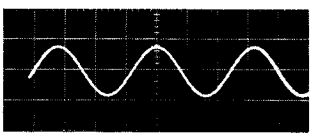
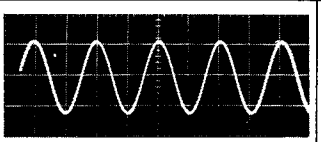
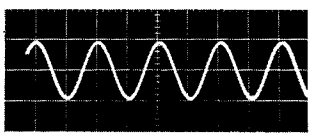
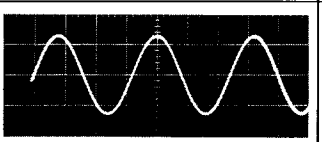
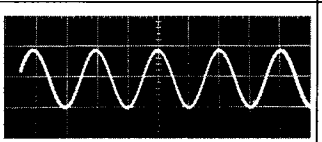

When the CD player AF oscillator is connected:
When the tape deck is connected:
Power on the unit.
Set the input selector button of the unit to the "CD" position.
Set the Speaker select buttons of the unit to the SPEAKERS "A" position.
Power on the unit.
Set the input selector button of the unit to the "TAPE MONITOR" position.
Set the Speaker select buttons of the unit to the SPEAKERS "A" position.
Run the CD player
or
Run the AF oscillator
Run the tape deck
(SZZP1056C/first program 1kHz, 0dB)
(Oscillator output at 500Hz, 200mV)
(QZZCLA 315Hz, 0dB)
Using the Oscilloscope, check the output waveforms at the test points on the circuit boards of the unit in the following order:
(L1, R1) → (L2, R2) → (L3, R3) → (L4, R4) → (L5, R5) → (L6, R6).
Refer to page 17.
Note: Connect the ⊕ probe of the oscilloscope to each test point and the ⊖ probe to chassis ground.

TEST POINTS POSITIONS OF AMPLIFIER CIRCUIT





NORMAL WAVEFORMS OF AMPLIFIER CIRCUIT AND LIKELY FAULY BLOCKS

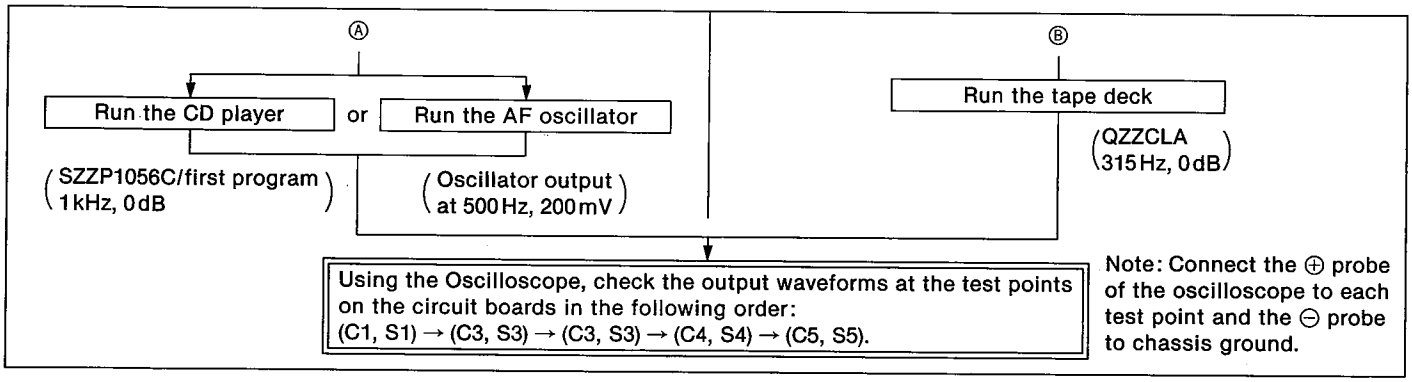
No.	TP	CD player	Tape deck	AF oscillator	Likely faulty block if the normal waveform shown at left is not present.
①	L1/R1	 0.5msec 5V	 1msec 500mV	 1msec 500mV	Input selector block IC402 & area
②	L2/R2	 0.5msec 5V	 1msec 500mV	 1msec 500mV	Dolby pro logic block IC1001 and IC1002 & area
③	L3/R3	 0.5msec 500mV	 1msec 50mV	 1msec 100mV	Master volume block VR501 & area
④	L4/R4	 0.5msec 1V	 1msec 1V	 1msec 1V	Tone control block IC511 & area
⑤	L5/R5	 0.5msec 500mV*	 1msec 500mV	 1msec 500mV	Power limiter block Q581 to Q584 & area
⑥	L6/R6	 0.5msec 10V*	 1msec 10V	 1msec 20V	Main amplifier block IC601 & area

Measurement conditions. Volume control (VR501), Treble control (VR512) and Bass control (VR511) positions: ⊙
∗Volume control (VR501) position for these test : ⊙

CHECKING PROCEDURE FOR SURROUND CIRCUIT

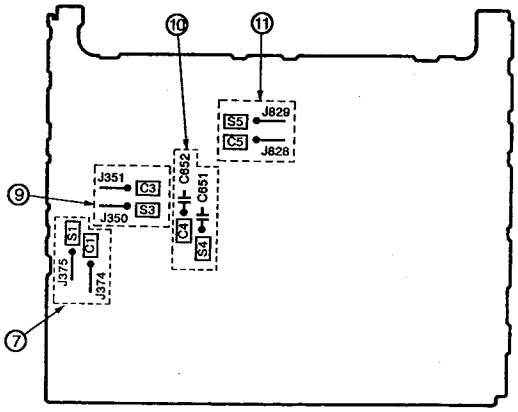
Outputting surround signals normally requires that opposite phase signals be applied to both the left and right channels. However, this unit incorporates a service mode, allowing the surround circuit to be tested using in-phase signals.

When the CD player or AF oscillator is connected:	When the tape deck is connected:
Power on the unit. Set the input selector button of the unit to the "CD" position.	Power on the unit. Set the input selector button of the unit to the "TAPE MONITOR" position.
↓	↓
While pressing both the "+" and "−" of the surround level adjustment button "SURROUND", press the "Power" button.	While pressing both the "+" and "−" of the surround level adjustment button "SURROUND" press the "POWER" button.
↓	↓
The letters 『SURR』 flash on the FL display.	The letters 『SURR』 flash on the FL display.
Ⓐ	Ⓑ

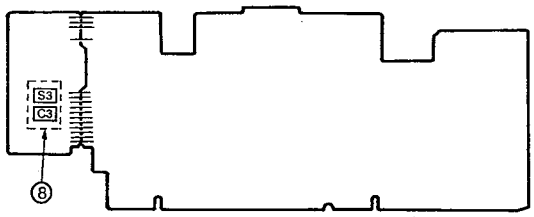

Ⓐ
Run the CD player
or
Run the AF oscillator
(SZZP1056C/first program
1kHz, 0dB)
(Oscillator output
at 500Hz, 200mV)
Ⓑ
Run the tape deck
(QZZCLA
315Hz, 0dB)
Using the Oscilloscope, check the output waveforms at the test points on the circuit boards in the following order:
(C1, S1) → (C3, S3) → (C3, S3) → (C4, S4) → (C5, S5).
Note: Connect the ⊕ probe of the oscilloscope to each test point and the ⊖ probe to chassis ground.

• To Exit the service mode, power off the unit.

TEST POINTS POSITIONS OF SOURROUND CIRCUIT

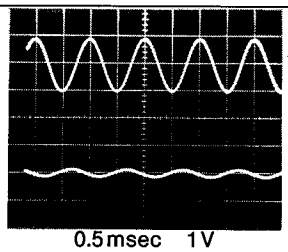
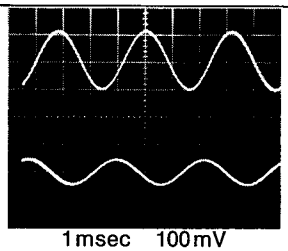
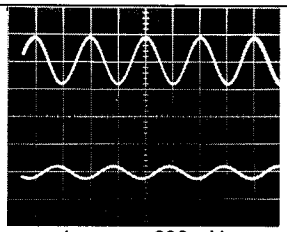
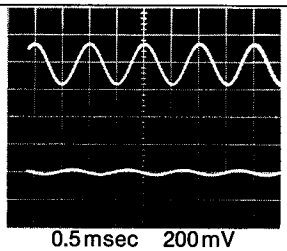
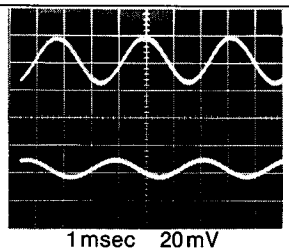
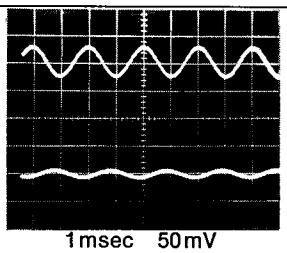
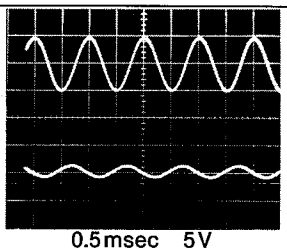
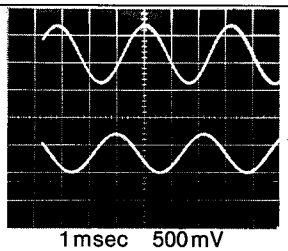
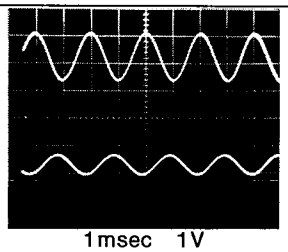


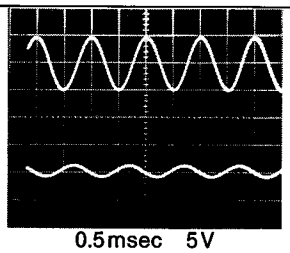
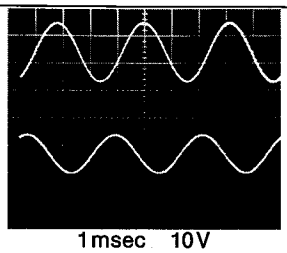
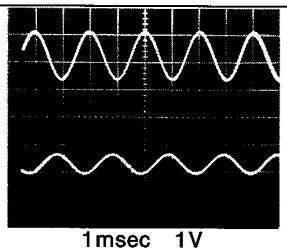
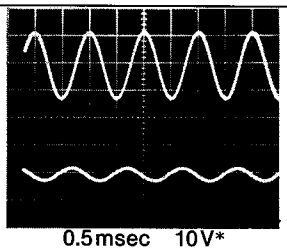
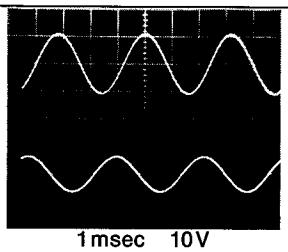
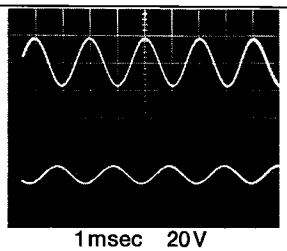
(MAIN P.C.B.)



(FL P.C.B.)

NORMAL WAVEFORMS OF SURROUND CIRCUIT AND LIKELY FAULTY BLOCKS

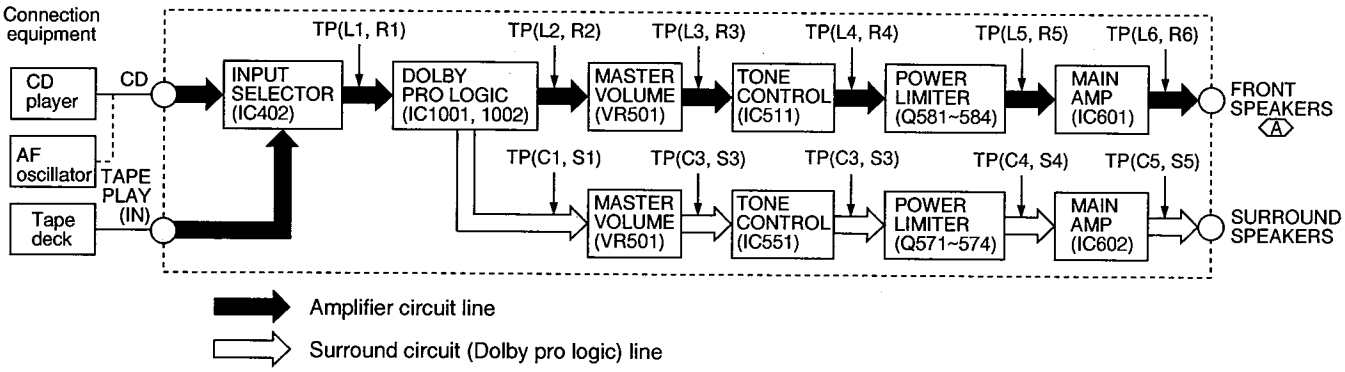
No.	TP	CD player	Tape deck	AF oscillator	Likely faulty block if the normal waveform shown at left is not present.
⑦	C1 S1	 0.5msec 1V	 1msec 100mV	 1msec 200mV	Dolby pro logic block IC1001 and IC1002 & area
⑧	C3 S3	 0.5msec 200mV	 1msec 20mV	 1msec 50mV	Master volume block VR501 & area
⑨	C3 S3	 0.5msec 5V	 1msec 500mV	 1msec 1V	Tone control block IC551 & area

No.	TP	CD player	Tape deck	AF oscillator	Likely faulty block if the normal waveform shown at left is not present.
⑩	C4 S4	 0.5msec 5V	 1msec 10V	 1msec 1V	Power limiter block and Q571 through Q574 & area
⑪	C5 S5	 0.5msec 10V*	 1msec 10V	 1msec 20V	Main amplifier block IC602 & area

Measurement conditions. Volume control (VR501), Treble control (VR512) and Bass control (VR511) positions: ⊙
∗Volume control (VR501) position for these test : ⊙

CIRCUIT BLOCKS

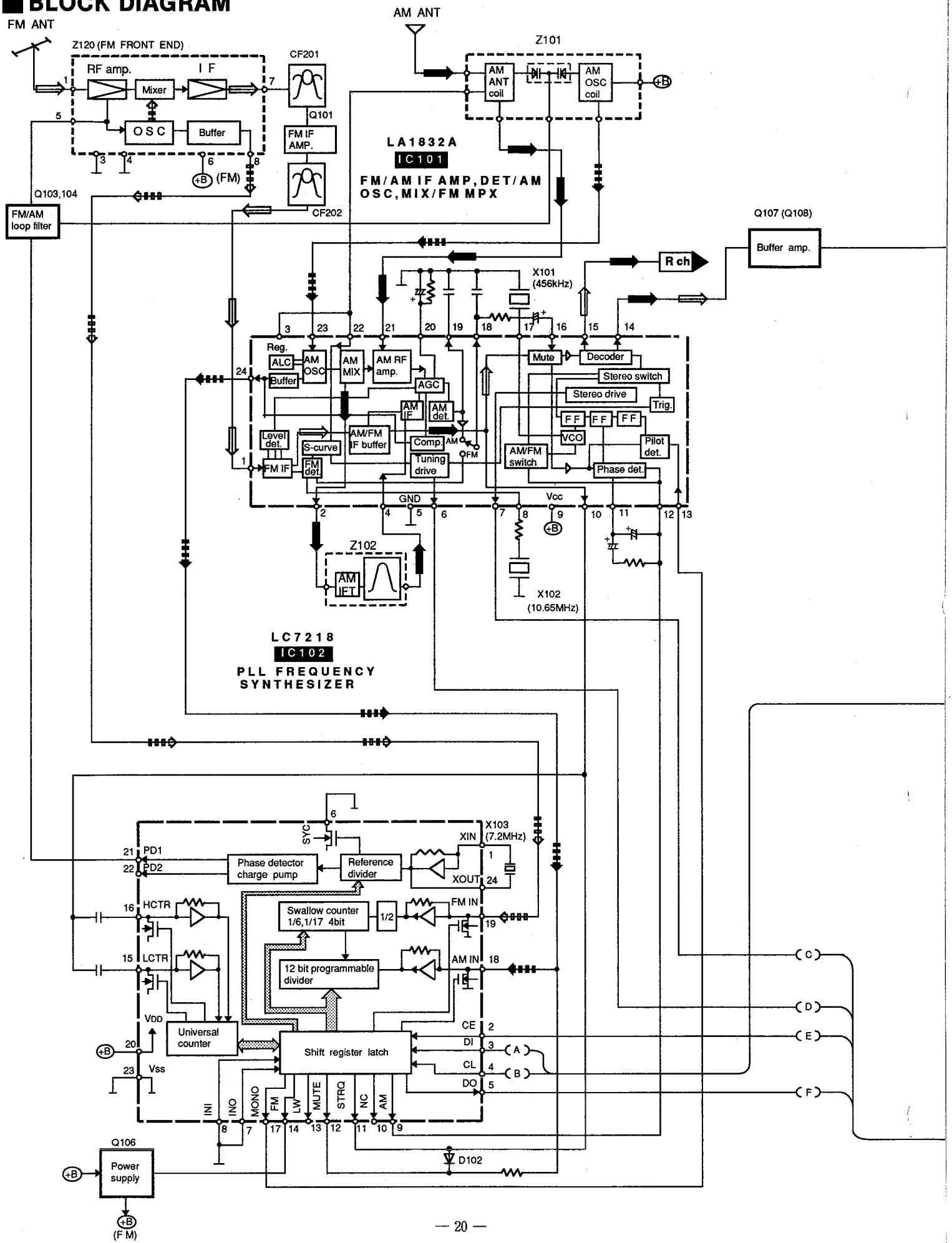
CIRCUIT BLOCKS OF THE MAIN UNIT

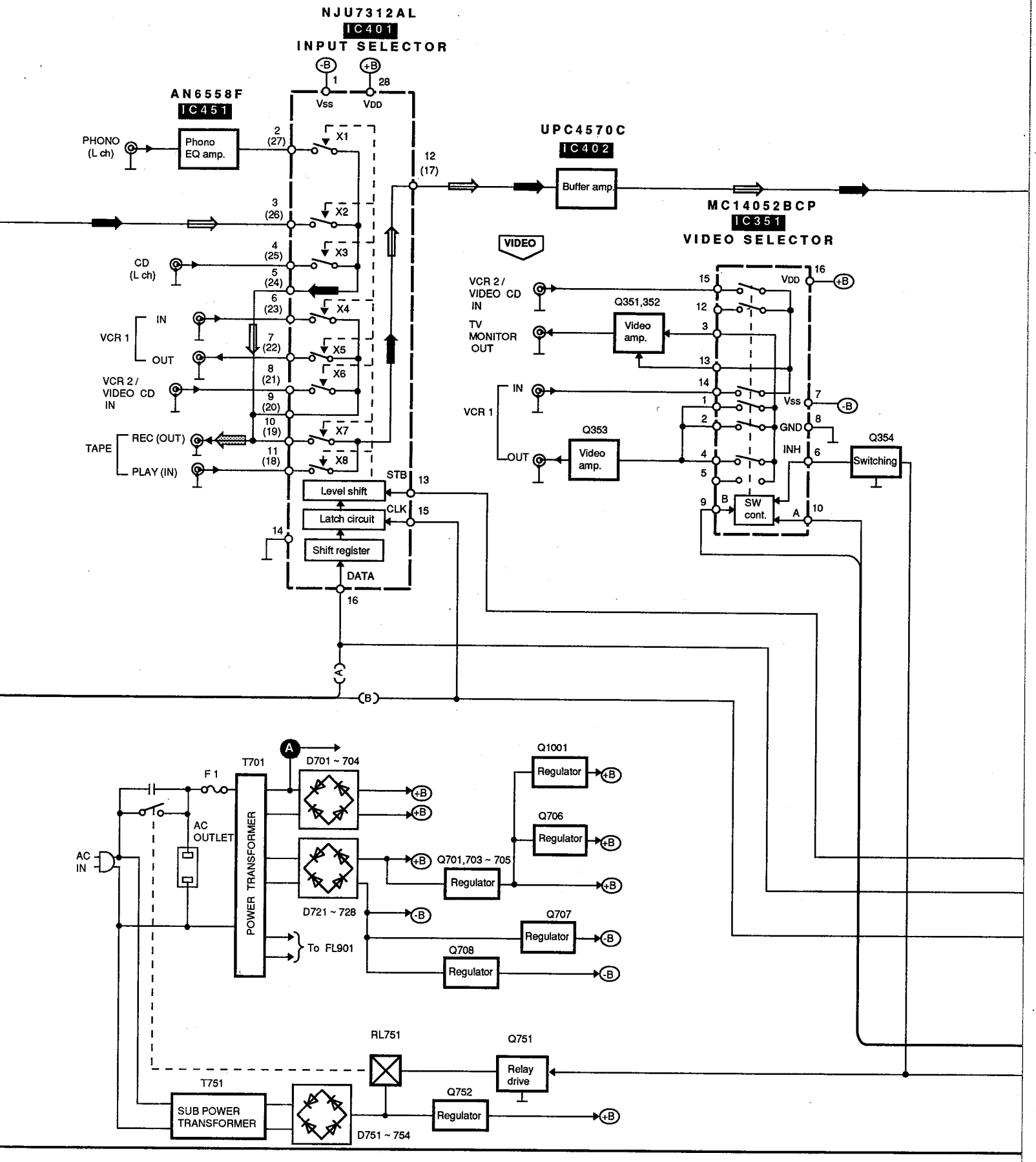


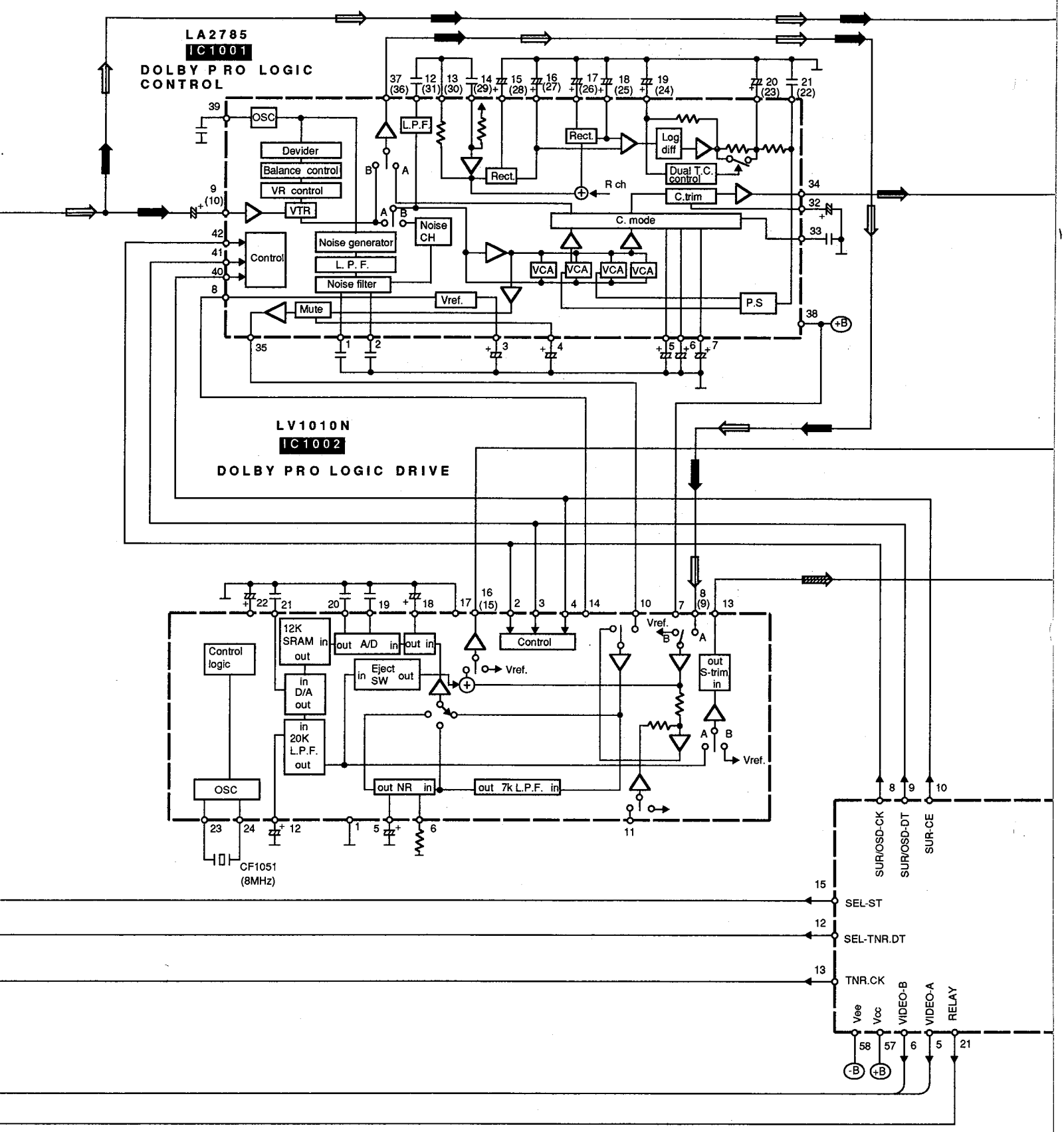
■ OVERLOAD DETECTION FUNCTION

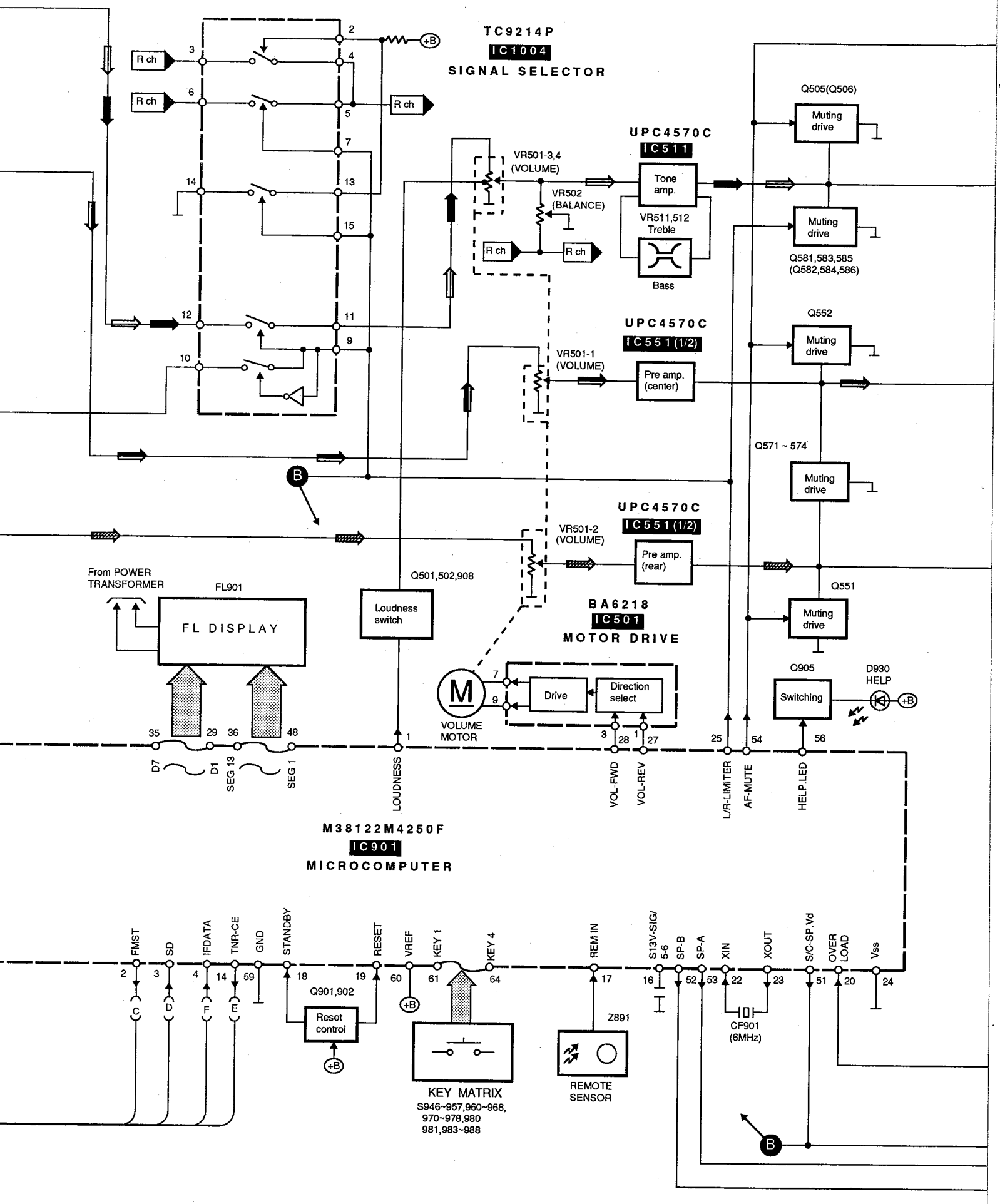
The HIC protection circuit functions if any cord at a speaker terminal is short-circuited or if the unit overheats because of improper operation. At the same time, 『OVERLOAD』 scrolls across the FL display.
In this state, all keys remain inoperative; if any key is pressed, 『SWITCH OFF POWER』 scrolls across the FL display.
If an overload occurs, immediately power off the unit and check the speaker connections, venting holes and cooling fans. After fixing any faults, power on the unit again and check for proper operation.
If no defects are found, or if the unit remains overloaded after it is power on again, check the circuit for faults.

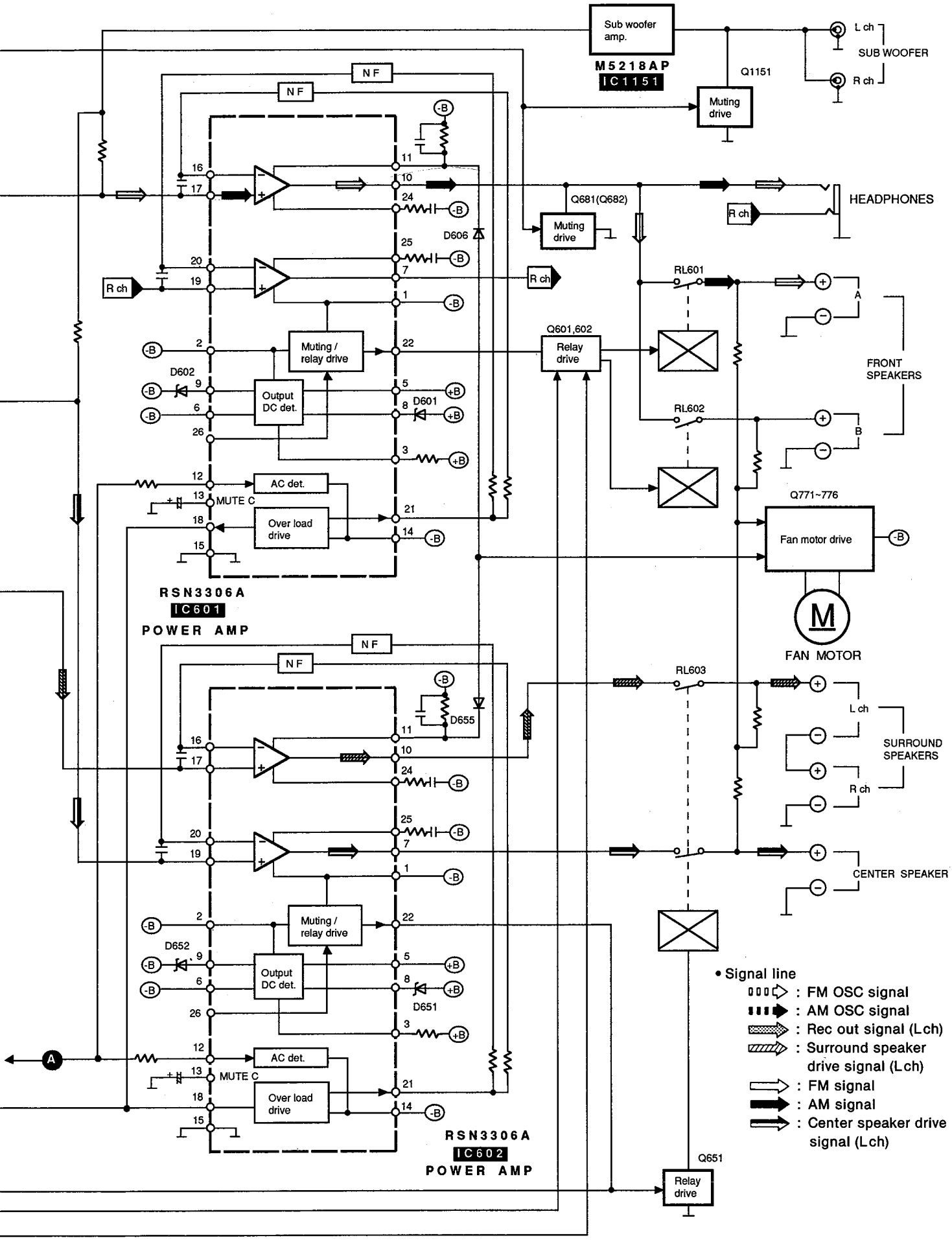
■ BLOCK DIAGRAM




NJU7312AL
IC401
INPUT SELECTOR
AN6558F
IC451
UPC4570C
IC402
MC14052BCP
IC351
VIDEO SELECTOR
PHONO (L ch)
Phono EQ amp.
CD (L ch)
VCR 1
IN
OUT
VCR 2 / VIDEO CD IN
TAPE
REC (OUT)
PLAY (IN)
X1
X2
X3
X4
X5
X6
X7
X8
Level shift
Latch circuit
Shift register
STB
CLK
DATA
Buffer amp.
VIDEO
VCR 2 / VIDEO CD IN
TV MONITOR OUT
Q351,352
Video amp.
Q353
Video amp.
VDD
Vss
GND
INH
SW cont.
Switching
Q354
AC IN
AC OUTLET
F 1
T701
POWER TRANSFORMER
D701 ~ 704
D721 ~ 728
To FL901
Q1001
Regulator
Q706
Regulator
Q701,703 ~ 705
Regulator
Q707
Regulator
Q708
Regulator
RL751
Q751
Relay drive
T751
SUB POWER TRANSFORMER
D751 ~ 754
Q752
Regulator


LA2785
IC1001
DOLBY PRO LOGIC CONTROL
OSC
Devider
Balance control
VR control
VTR
Control
Noise generator
L. P. F.
Noise filter
Noise CH
L.P.F
Rect.
Log diff
Dual T.C. control
C.trim
R ch
C. mode
VCA
Vref.
Mute
P.S
+B
LV1010N
IC1002
DOLBY PRO LOGIC DRIVE
12K SRAM in out
out A/D in
out in
Control
Eject SW
Control logic
in D/A out
in 20K L.P.F. out
out S-trim in
OSC
out NR in
out 7k L.P.F. in
CF1051 (8MHz)
SUR/OSD-CK
SUR/OSD-DT
SUR-CE
SEL-ST
SEL-TNR.DT
TNR.CK
Vee
Vcc
VIDEO-B
VIDEO-A
RELAY
-B
+B


TC9214P
IC1004
SIGNAL SELECTOR
R ch
+B
UPC4570C
IC511
Tone amp.
VR501-3,4 (VOLUME)
VR502 (BALANCE)
VR511,512 Treble
Bass
Q505(Q506)
Muting drive
Q581,583,585 (Q582,584,586)
UPC4570C
IC551(1/2)
Pre amp. (center)
VR501-1 (VOLUME)
Q552
UPC4570C
IC551(1/2)
Pre amp. (rear)
VR501-2 (VOLUME)
Q571 ~ 574
Q551
From POWER TRANSFORMER
FL901
FL DISPLAY
Q501,502,908
Loudness switch
BA6218
IC501
MOTOR DRIVE
M
VOLUME MOTOR
Drive
Direction select
Q905
Switching
D930
HELP
D7
D1
SEG 13
SEG 1
LOUDNESS
VOL-FWD
VOL-REV
L/R-LIMITER
AF-MUTE
HELP LED
M38122M4250F
IC901
MICROCOMPUTER
FMST
SD
IFDATA
TNR-CE
GND
STANDBY
RESET
VREF
KEY 1
KEY 4
REM IN
S13V-SIG/ 5-6
SP-B
SP-A
XIN
XOUT
S/C-SP.Vd
OVER LOAD
Vss
Q901,902
Reset control
CF901 (6MHz)
Z891
REMOTE SENSOR
KEY MATRIX
S946~957,960~968, 970~978,980 981,983~988


Sub woofer amp.
M5218AP
IC1151
Q1151
Muting drive
L ch
R ch
SUB WOOFER
HEADPHONES
Q681(Q682)
Muting drive
R ch
D606
RL601
RL602
RL603
A
B
FRONT SPEAKERS
Q601,602
Relay drive
Muting / relay drive
Output DC det.
AC det.
Over load drive
MUTE C
D602
D601
Q771~776
Fan motor drive
M
FAN MOTOR
RSN3306A
IC601
POWER AMP
D655
D652
D651
RSN3306A
IC602
POWER AMP
L ch
R ch
SURROUND SPEAKERS
CENTER SPEAKER
Q651
Relay drive
• Signal line
: FM OSC signal
: AM OSC signal
: Rec out signal (Lch)
: Surround speaker drive signal (Lch)
: FM signal
: AM signal
: Center speaker drive signal (Lch)

■ TERMINAL GUIDE

• IC901 (M38122M4250F): MICROCOMPUTER

Pin No.	Mark	I/O Division	Function
1	LOUDNESS	—	Not used, open
2	FM_ST	I	Stereo signal detect terminal
3	SD	I	Received signal detect terminal
4	IF_DATA	I	Serial data signal
5	VIDEO_A	O	Video selector control terminal
6	VIDEO_B		
7	SFC_SW	—	Not used, open
8	SUR/ OSD_CK	O	Serial clock signal
9	SUR/ OSD_DT	O	Serial data signal
10	SUR_CE	O	Chip enable signal
11	OSD_ST	—	Not used, open
12	SEL/ TNR_DT	O	Serial data signal
13	SEL/ TNR_CK	O	Serial clock signal
14	TNR_CE	O	Chip enable signal
15	SEL_ST	O	Level shift control terminal
16	S13V_SIG /5−6	O	Not used, connected to capacitor
17	REM_IN	I	Remote control terminal
18	STANDBY	I	Power detect terminal
19	RESET	I	Reset detect terminal
20	OVERLOAD	I	Over load detect terminal
21	RELAY	O	Relay control terminal
22	Xin	I	Crystal oscillator terminal (6MHz)
23	Xout	O	

Pin No.	Mark	I/O Division	Function
24	Vss	—	GND terminal
25	L/R_LIMITER	O	Muting drive control
26	NC	—	Not used, connected to resister
27	VOL_REV	O	Rotation control terminal of volume motor
28	VOL_FWD		
29 ⟆ 35	D1 ⟆ D7	O	Digit signal of FL display
36 ⟆ 48	Seg13 ⟆ Seg1	O	Segment signal of FL display
49	INIT_IN	I	Not used, connected to resister
50	H_MUTE	—	Not used, connected to resister
51	S/C_SP. Vd	O	Surround and speaker select control terminal
52	SP_B	O	Speaker select control terminal
53	SP_A		
54	AF_MUTE	O	Muting control terminal
55	STANDBY_ LED/VCR1	O	Not used, connected to resister
56	HELP_LED	O	LED drive signal (HELP)
57	Vcc	I	Power supply terminal
58	Vee	I	Power supply terminal
59	GND	—	GND terminal
60	Vref	I	Power supply terminal
61 ⟆ 64	KEY1 ⟆ KEY4	I	Key matrix detect terminal

■ SCHEMATIC DIAGRAM (Parts list on pages 45~47, 50~53.)

(This schematic diagram may be modified at any time with the development of new technology.)

Note:

- **S946** : Numeric (5) switch.
- **S947** : Center level adjust (CENTER (−)) switch.
- **S948** : Test signal ON/OFF (TEST) switch.
- **S949** : Numeric (4) switch.
- **S950** : Numeric (6) switch.
- **S951** : Center level adjust (CENTER (+)) switch.
- **S952** : Numeric (7) switch.
- **S953** : Surround select (SURROUND (−)) switch.
- **S954** : Input select (CD) switch.
- **S955** : Input select (TUNER) switch.
- **S956** : Center mode select (CENTER MODE) switch.
- **S957** : Numeric (9) switch.
- **S960** : Surround select (SURROUND (+)) switch.
- **S961** : Numeric (8) switch.
- **S962** : Numeric (0) switch.
- **S963** : Delay time adjust (DELAY TIME) switch.
- **S964** : Input select (PHONO) switch.
- **S965** : Muting/loudness (-MUTING/−LOUDNESS) switch.
- **S966** : Memory (MEMORY) switch.
- **S967** : Help/reset (-HELP/−RESET) switch.
- **S968** : Numeric (≧10).
- **S970** : Tape monitor ([TAPE MONITOR]) switch.
- **S971** : Input select (VCR 2/VIDEO CD) switch.
- **S972** : Input select (VCR 1) switch.
- **S973** : Speaker select (SPEAKERS A) switch.
- **S974** : Tuning control (TUNING ∧) switch.
- **S975** : Tuning control (TUNING ∨) switch.
- **S976** : Band select (BAND) switch.
- **S977** : FM mode select (FM AUTO/MONO) switch.
- **S978** : Power (POWER) switch.
- **S980** : SFC mode select (SFC) switch.
- **S981** : Speaker select (SPEAKERS B) switch.
- **S983** : DOLBY PRO LOGIC mode select (PRO LOGIC) switch.
- **S984** : DOLBY PRO LOGIC/SFC OFF ON (OFF/ON) switch.
- **S985** : Numeric (3) switch.
- **S986** : Numeric (2) switch.
- **S987** : Numeric (1) switch.
- **S988** : Direct tuning (DIRECT TUNING) switch.

- Signal line
  - : FM OSC signal
  - : AM OSC signal
  - : Rec out signal (Lch)
  - : Surround speaker drive signal (Lch)
  - : Positive voltage lines
  - : Negative voltage lines
  - : FM signal
  - : AM signal
  - : Center speaker drive signal (Lch)
- Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used as occation calls. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts.
- All voltage values shown in circuitry are DC voltage in FM signal (Stereo signal) reception mode.

*Figures in ( ) Stand for DC-voltage in AM signal reception mode.

- L1~L6, R1~R6, C1, C3, C4, C5, S1, S3, S4 and S5 in the schematic diagram show the test points.
  For detail, please refer to p. 16~p. 19.

Note 2:

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE 8A 125V FUSE.

RISK OF FIRE-REPLACE FUSE AS MARKED.

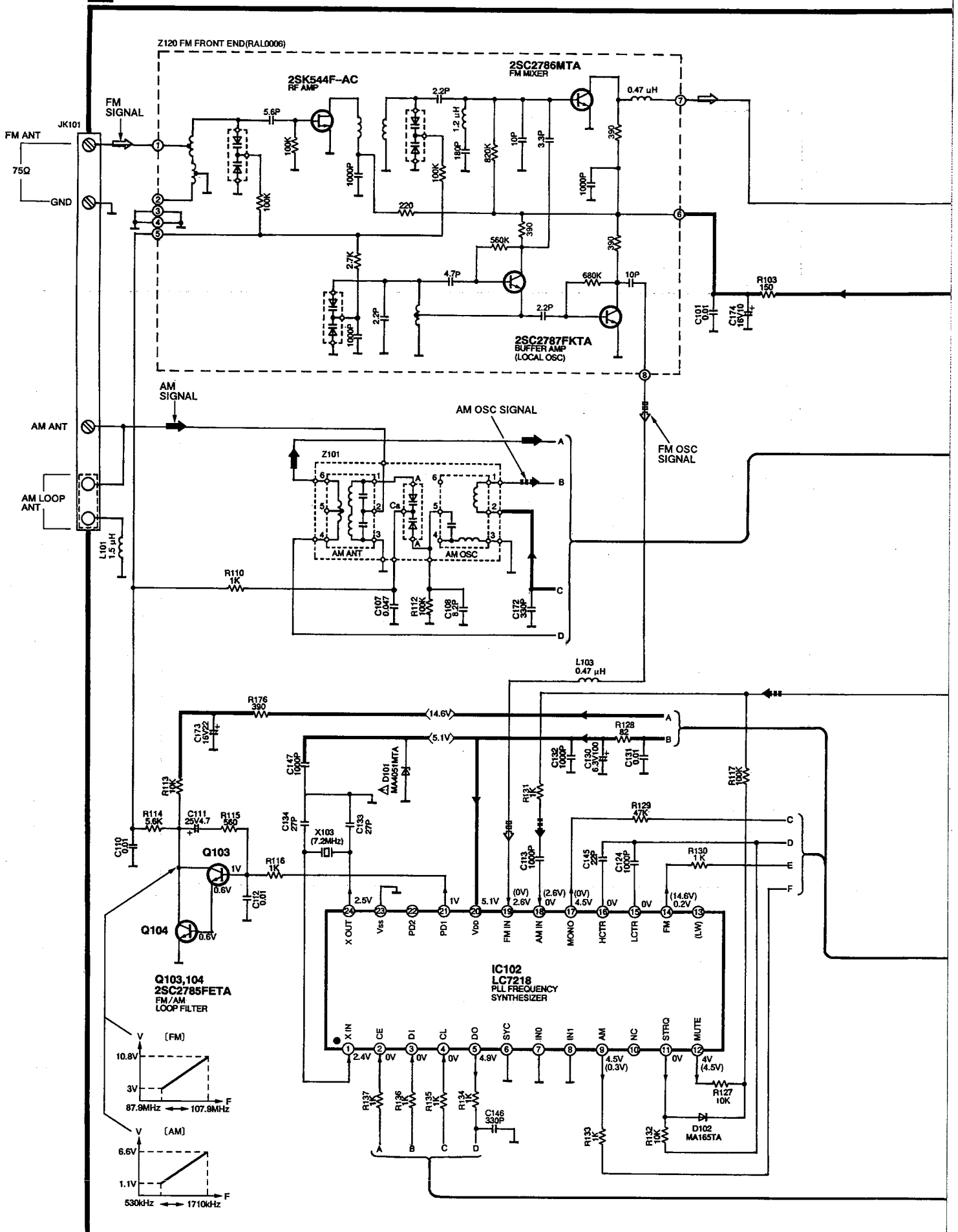
FUSE CAUTION

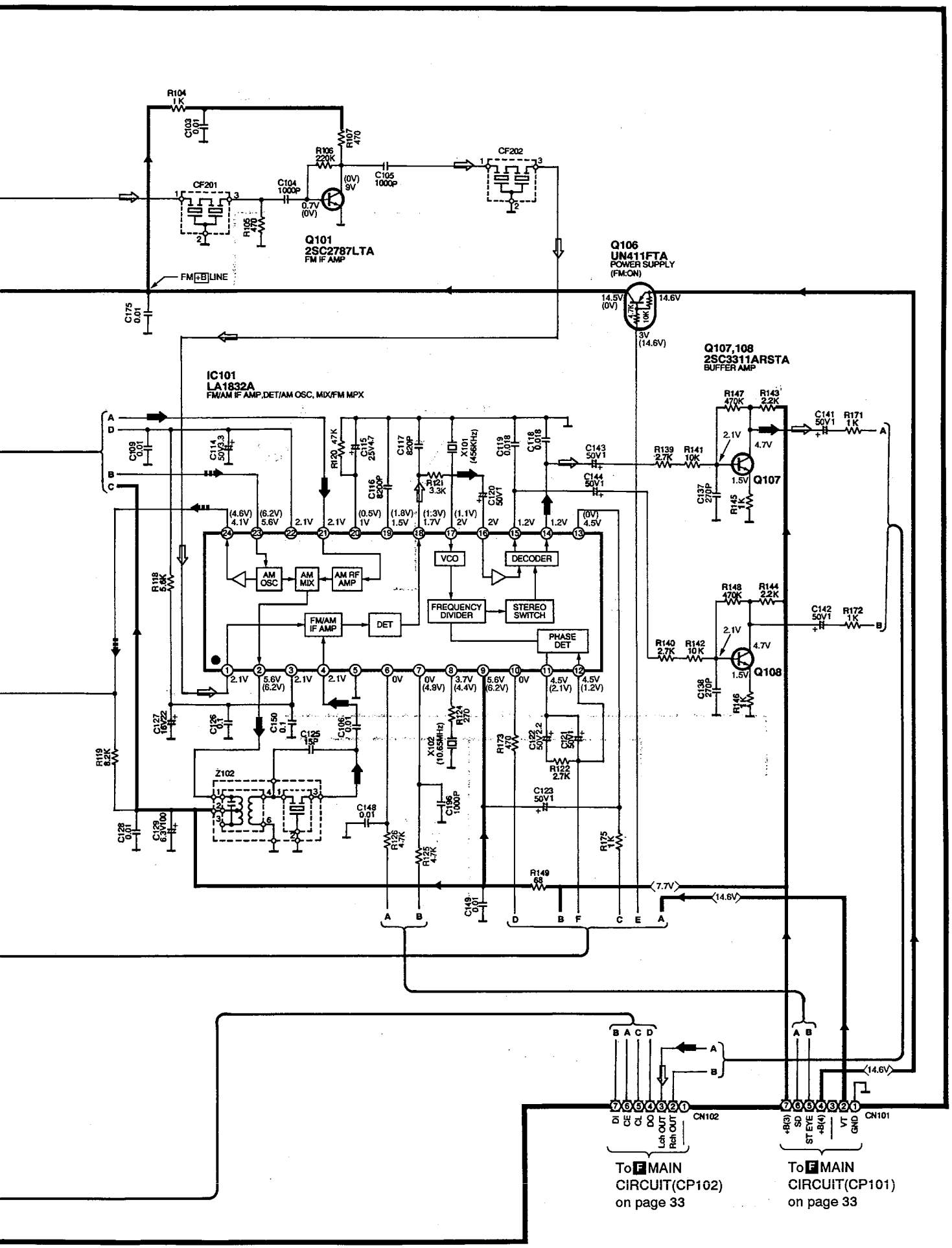
This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating, refer to the marking adjacent to the symbol.

Ce symbole indique que le fusible utilisé est à rapide. Pour une protection permanente, n' utiliser que des fusibles de même type. Ce dernier est indiqué là qù le présent symbole est apposé.

- **Caution!**
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with alminum foil.
- Ground the soldering iron.
- Put a conductive mat on the work table.
- Do not touch the legs of IC or LSI with the fingers directly.

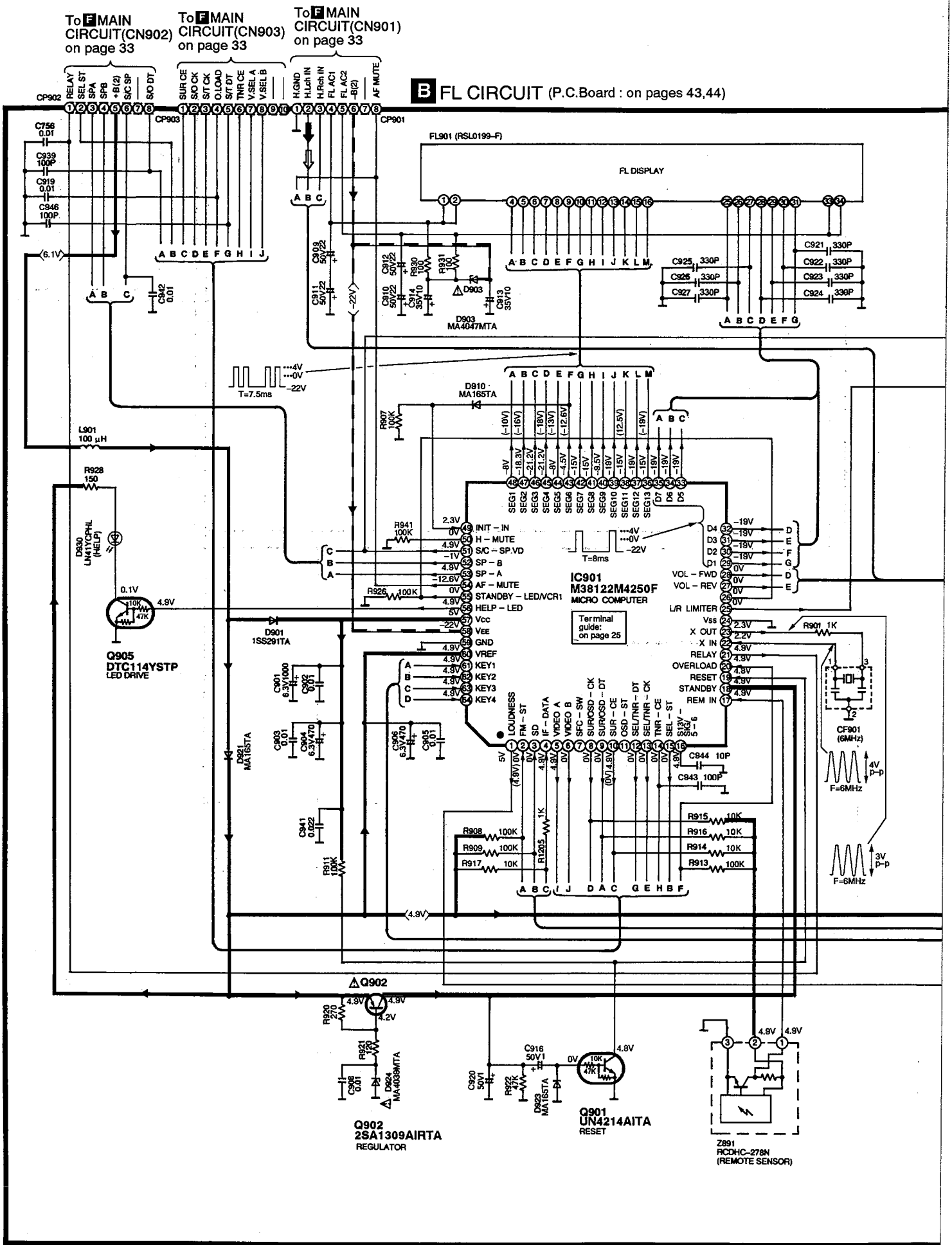
A TUNER CIRCUIT (P.C. Board: on page 40)

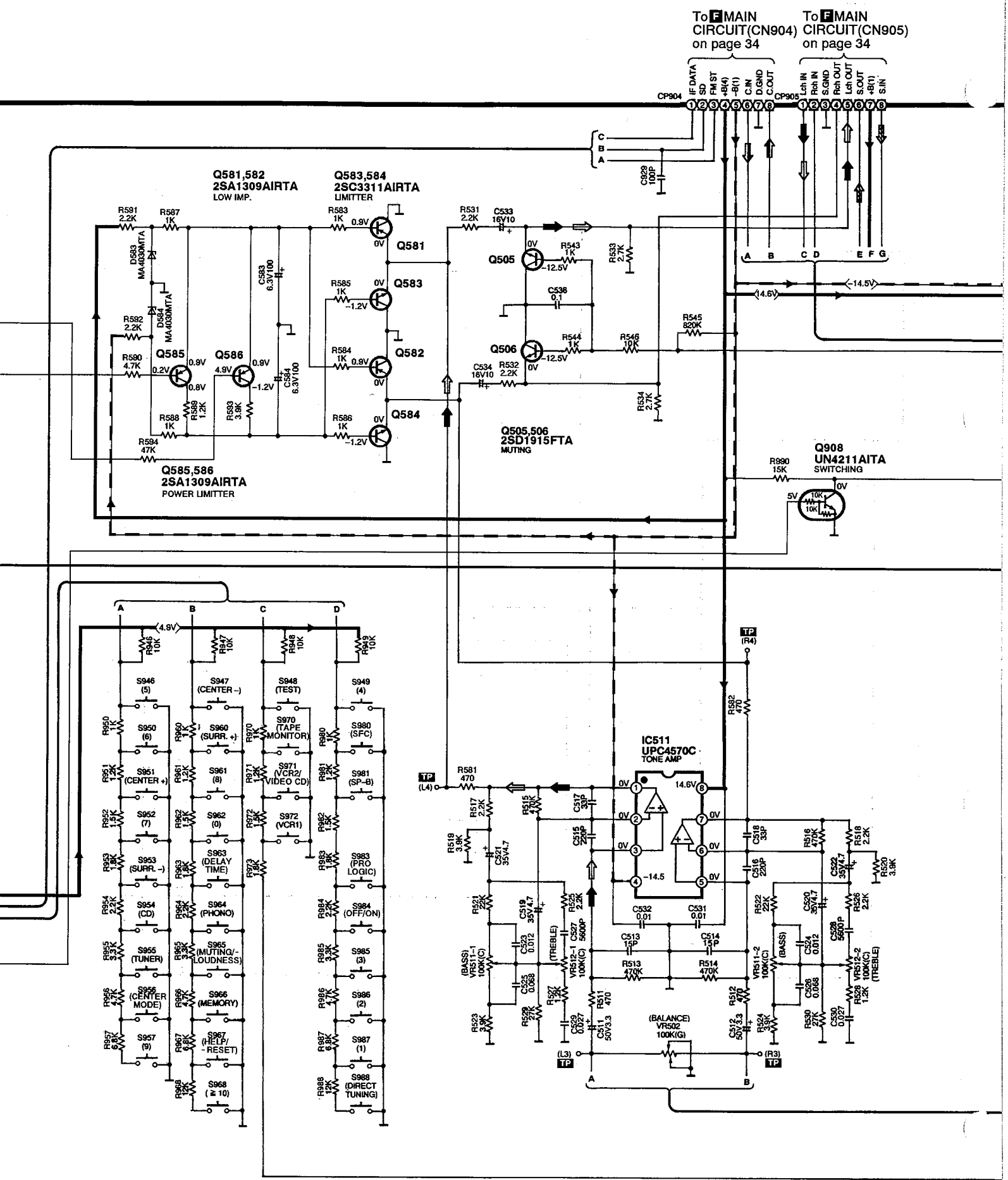




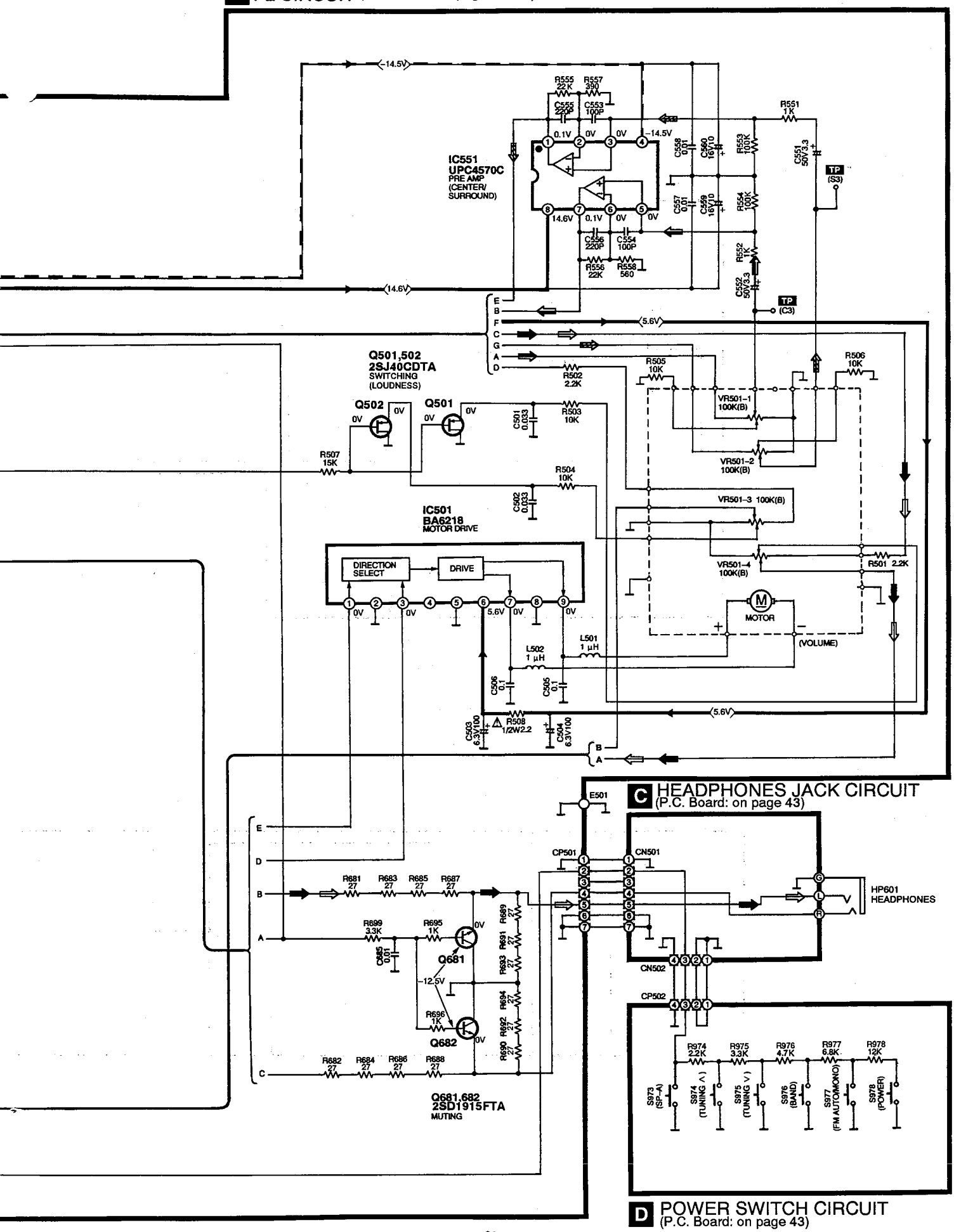
To F MAIN CIRCUIT(CP102) on page 33

To F MAIN CIRCUIT(CP101) on page 33


To F MAIN CIRCUIT(CN902) on page 33
To F MAIN CIRCUIT(CN903) on page 33
To F MAIN CIRCUIT(CN901) on page 33
B FL CIRCUIT (P.C.Board : on pages 43,44)
CP902
CP903
CP901
FL901 (RSL0199-F)
FL DISPLAY
IC901
M38122M4250F
MICRO COMPUTER
Terminal guide: on page 25
Q905
DTC114YSTP
LED DRIVE
Q902
2SA1309AIRTA
REGULATOR
Q901
UN4214AITA
RESET
Z891
RCDHC-278N
(REMOTE SENSOR)
D903
MA4047MTA
D910
MA165TA
D901
1SS291TA
D821
MA165TA
D824
MA4039MTA
D823
MA165TA
D830
LN41YCPHL
(HELP)
L901
100 µH
CF901
(6MHz)
F=6MHz
T=7.5ms
T=8ms
INIT – IN
H – MUTE
S/C – SP.VD
SP – B
SP – A
AF – MUTE
STANDBY – LED/VCR1
HELP – LED
Vcc
Vee
GND
VREF
KEY1
KEY2
KEY3
KEY4
VOL – FWD
VOL – REV
L/R LIMITER
Vss
X OUT
X IN
RELAY
OVERLOAD
RESET
STANDBY
REM IN


To F MAIN CIRCUIT(CN904) on page 34
To F MAIN CIRCUIT(CN905) on page 34
CP904
CP905
IF DATA
SD
FM ST
+B(4)
-B(1)
C.IN
D.GND
C.OUT
Lch IN
Rch IN
S.GND
Rch OUT
Lch OUT
S.OUT
+B(1)
S.IN
Q581,582
2SA1309AIRTA
LOW IMP.
Q583,584
2SC3311AIRTA
LIMITTER
Q581
Q582
Q583
Q584
Q585
Q586
Q585,586
2SA1309AIRTA
POWER LIMITTER
Q505
Q506
Q505,506
2SD1915FTA
MUTING
Q908
UN4211AITA
SWITCHING
IC511
UPC4570C
TONE AMP
(BASS) VR511-1 100K(C)
(TREBLE) VR512-1 100K(C)
(BALANCE) VR502 100K(G)
(BASS) VR511-2 100K(C)
(TREBLE) VR512-2 100K(C)
S946 (5)
S947 (CENTER –)
S948 (TEST)
S949 (4)
S950 (6)
S951 (CENTER +)
S952 (7)
S953 (SURR. –)
S954 (CD)
S955 (TUNER)
S956 (CENTER MODE)
S957 (9)
S960 (SURR. +)
S961 (8)
S962 (0)
S963 (DELAY TIME)
S964 (PHONO)
S965 (MUTING/-LOUDNESS)
S966 (MEMORY)
S967 (HELP/ -RESET)
S968 (≧ 10)
S970 (TAPE MONITOR)
S971 (VCR2/ VIDEO CD)
S972 (VCR1)
S980 (SFC)
S981 (SP–B)
S983 (PRO LOGIC)
S984 (OFF/ON)
S985 (3)
S986 (2)
S987 (1)
S988 (DIRECT TUNING)

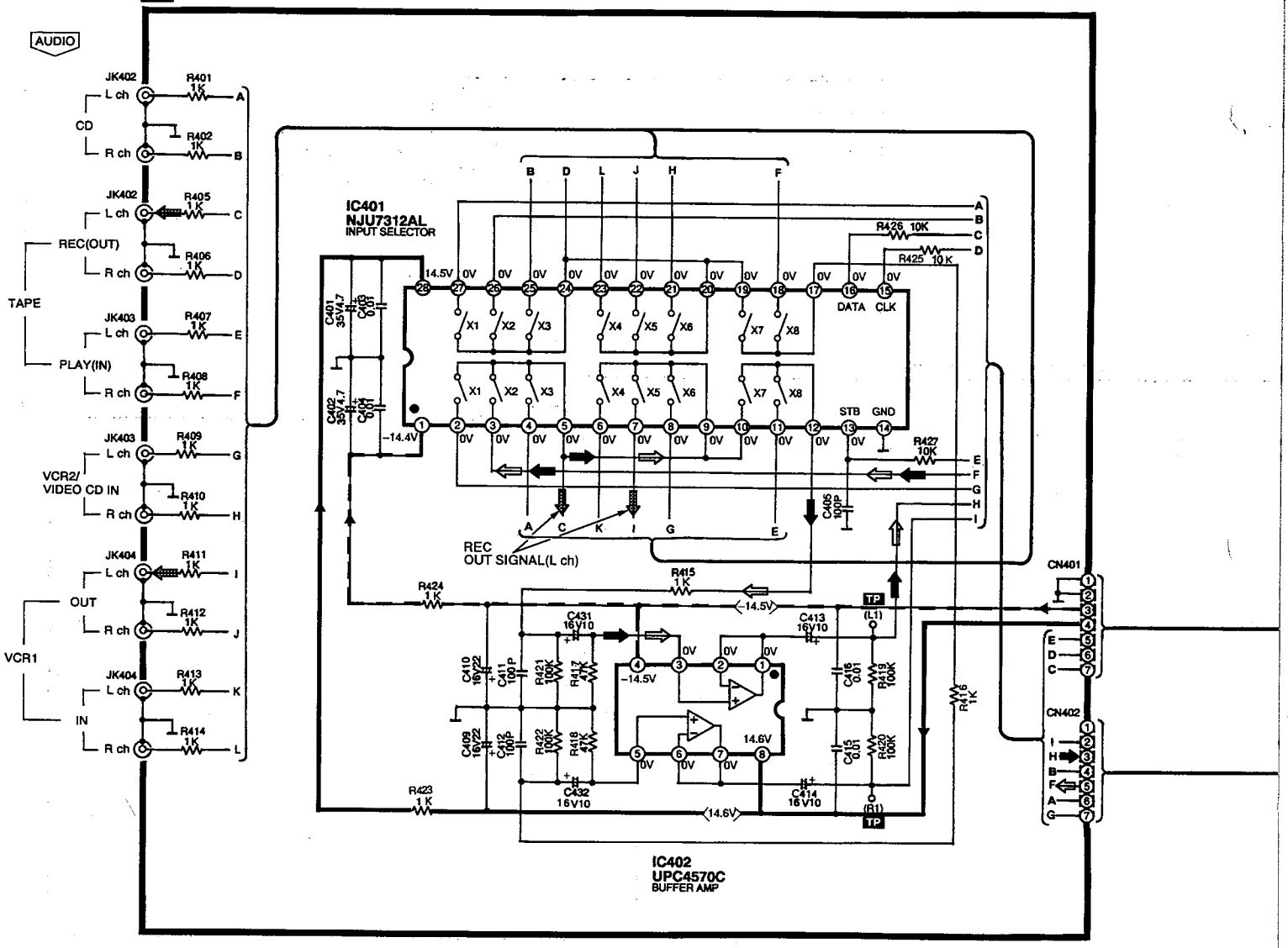
B FL CIRCUIT (P.C. Board: on pages 43,44)

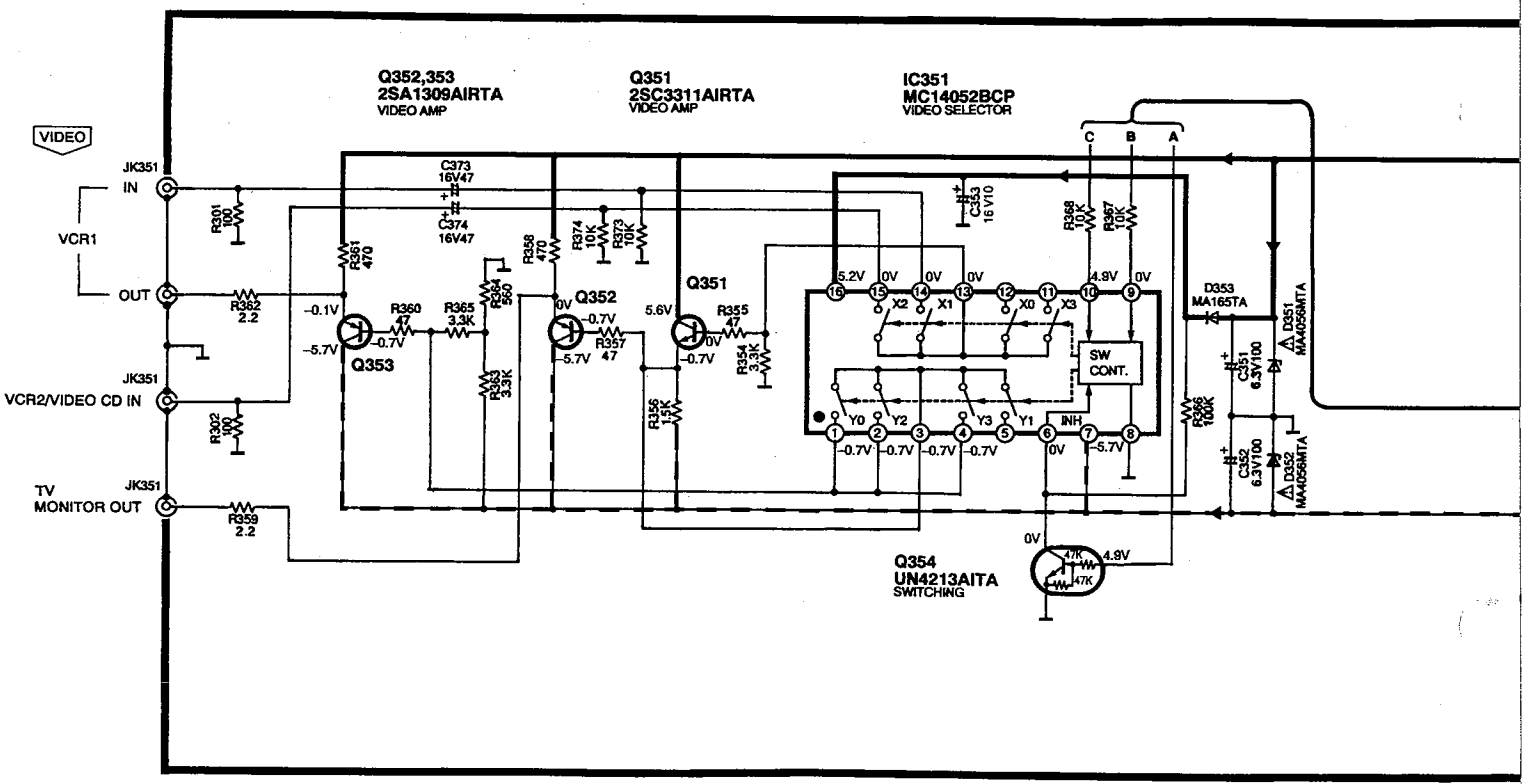


C HEADPHONES JACK CIRCUIT (P.C. Board: on page 43)

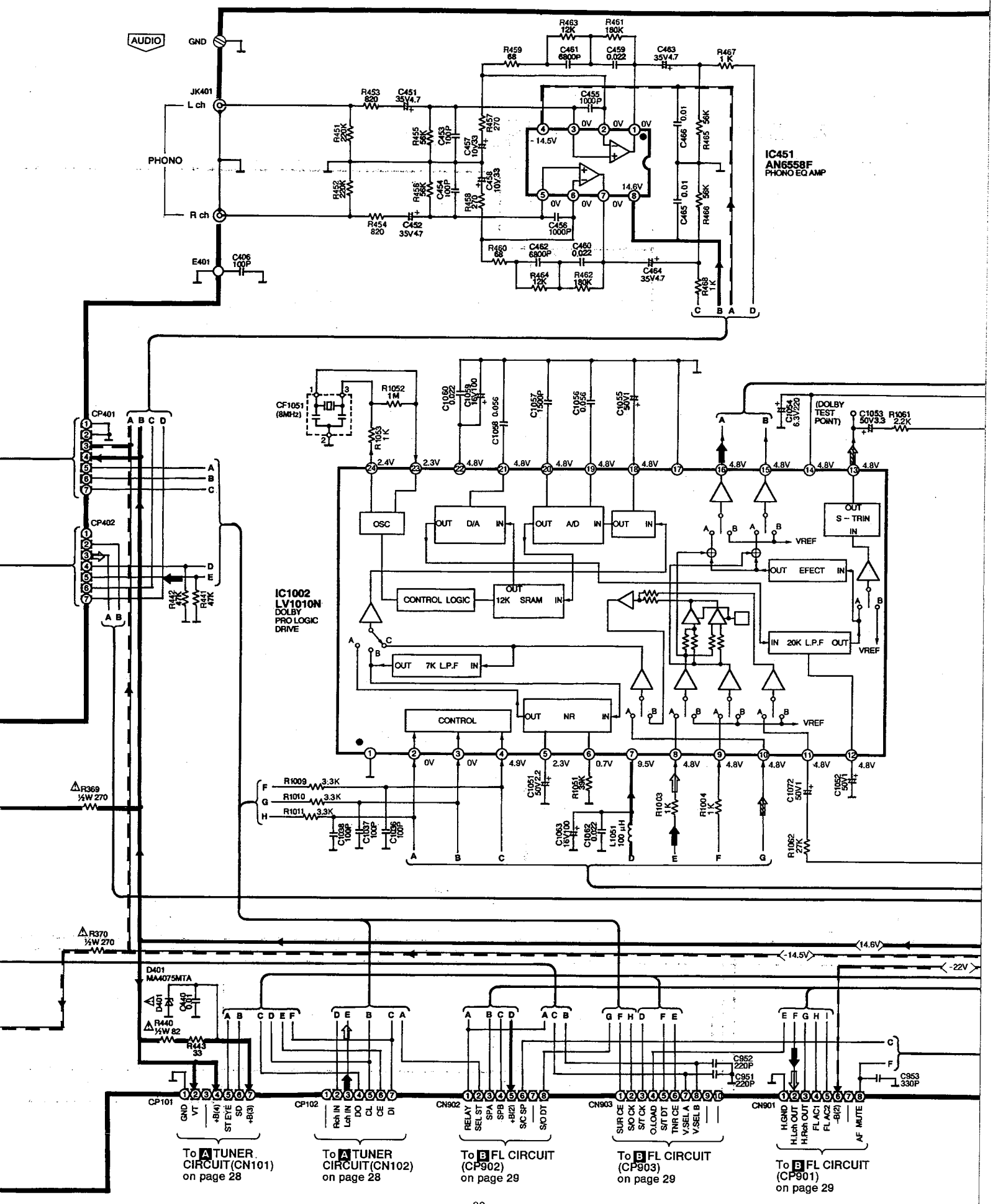
D POWER SWITCH CIRCUIT (P.C. Board: on page 43)

E IN/OUT TERMINAL CIRCUIT (P.C. Board : on page 44)

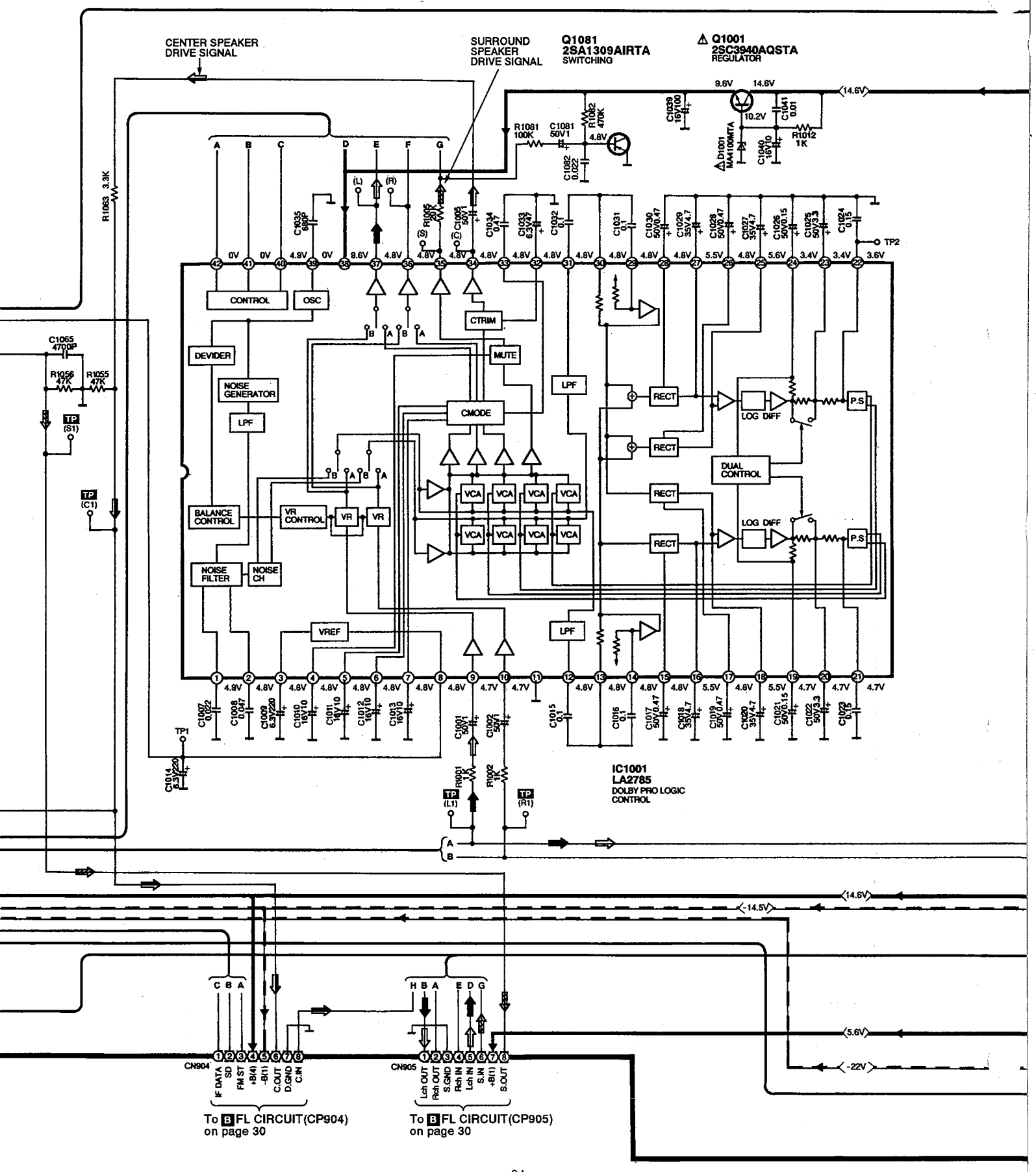


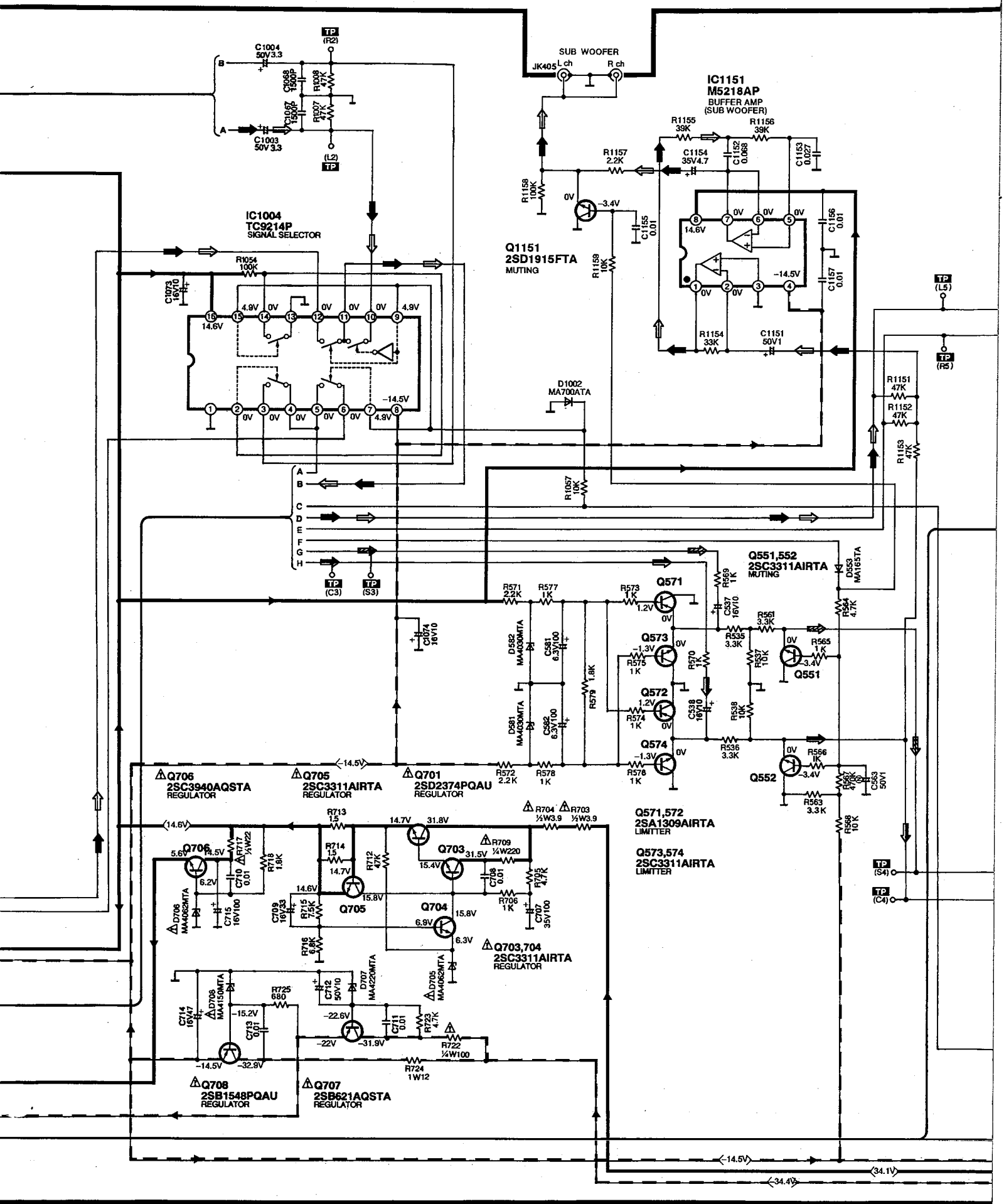


F MAIN CIRCUIT (P.C. Board: on pages 41,42)

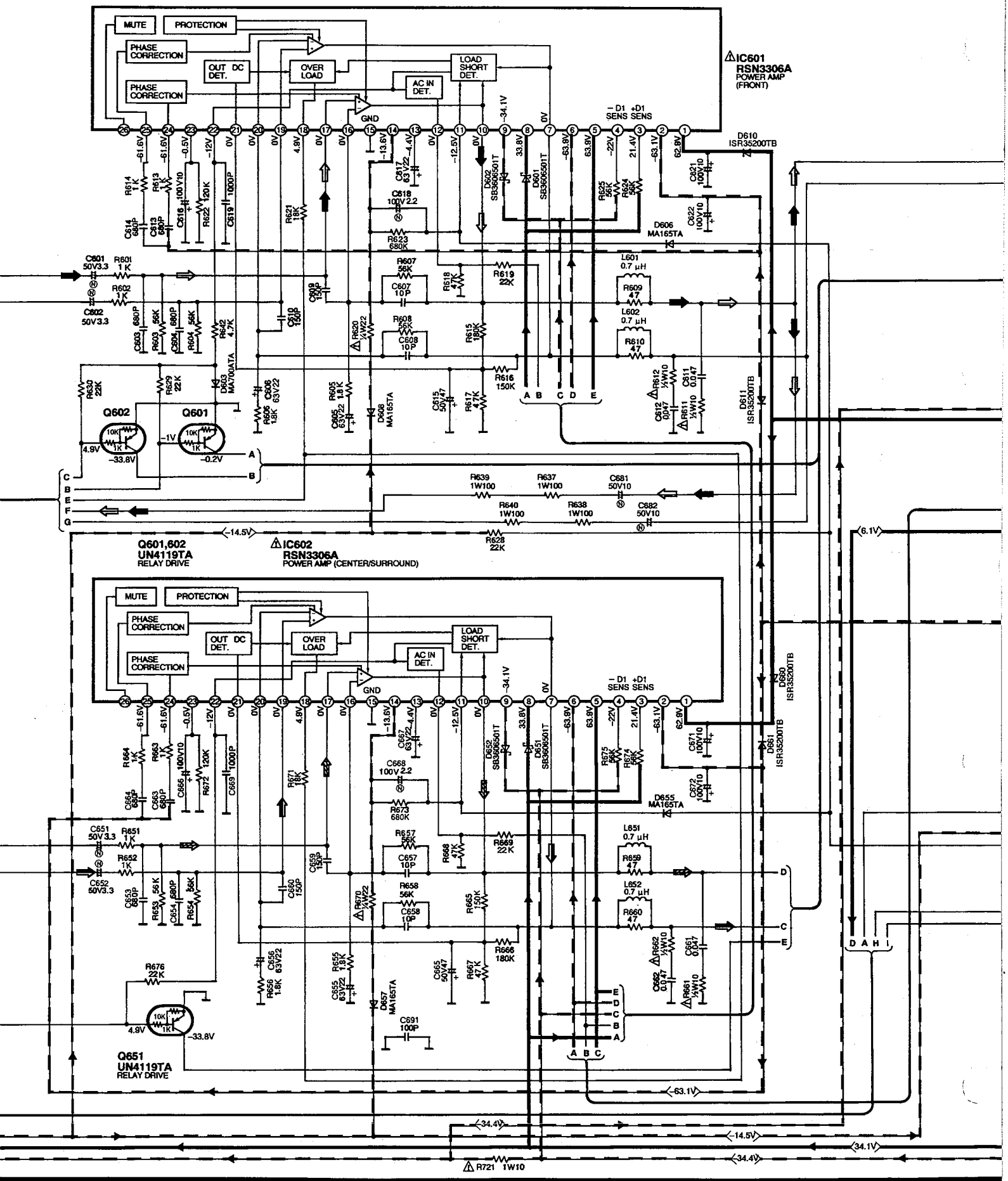


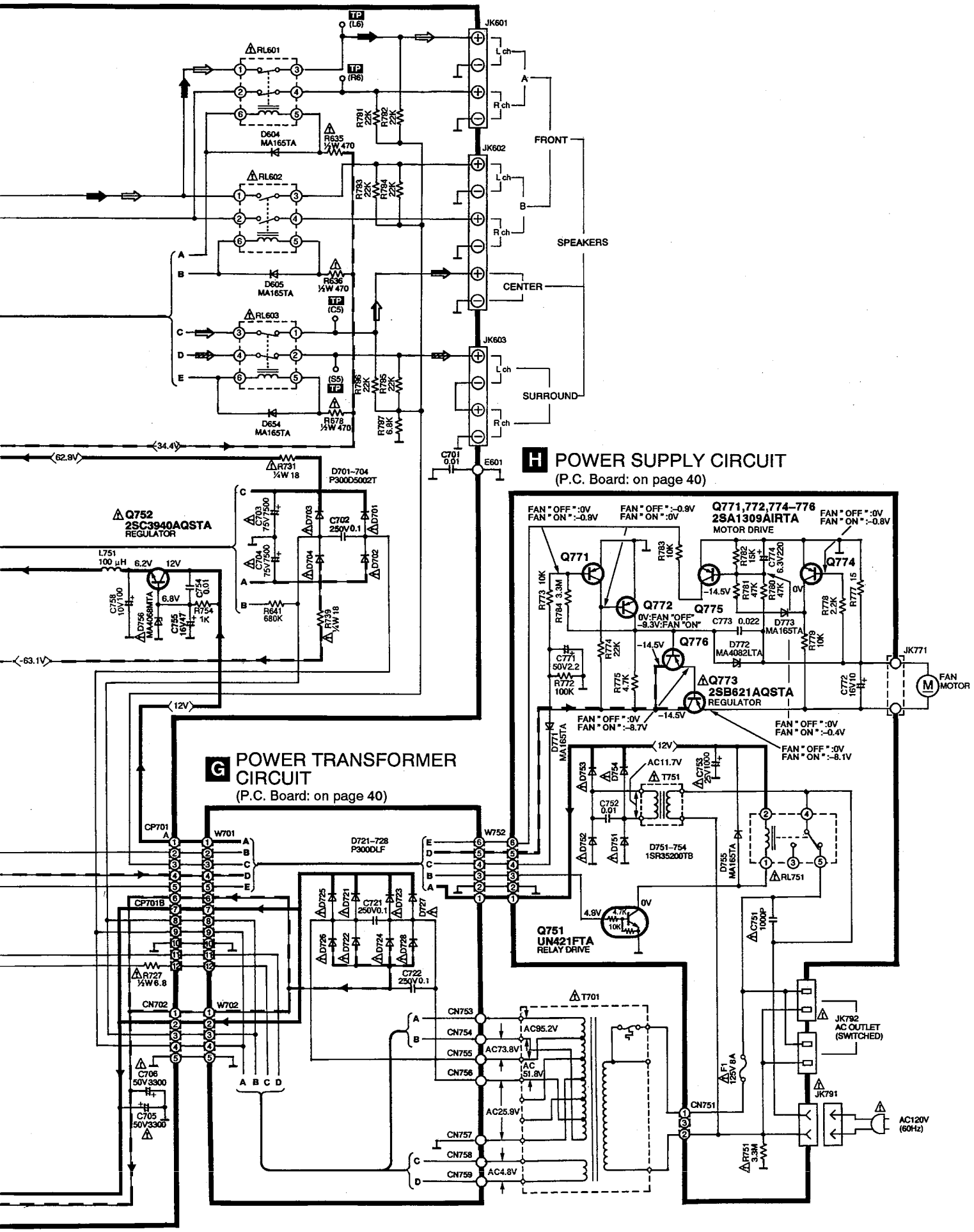
F MAIN CIRCUIT (P.C. Board: on pages 41,42)




SUB WOOFER
JK405 L ch R ch
IC1151
M5218AP
BUFFER AMP
(SUB WOOFER)
IC1004
TC9214P
SIGNAL SELECTOR
Q1151
2SD1915FTA
MUTING
D1002
MA700ATA
Q551,552
2SC3311AIRTA
MUTING
Q571
Q572
Q573
Q574
Q551
Q552
Q706
2SC3940AQSTA
REGULATOR
Q705
2SC3311AIRTA
REGULATOR
Q701
2SD2374PQAU
REGULATOR
Q571,572
2SA1309AIRTA
LIMITTER
Q573,574
2SC3311AIRTA
LIMITTER
Q703,704
2SC3311AIRTA
REGULATOR
Q708
2SB1548PQAU
REGULATOR
Q707
2SB621AQSTA
REGULATOR
TP (R2)
TP (L2)
TP (L5)
TP (R5)
TP (C3)
TP (S3)
TP (S4)
TP (C4)
-14.5V
-34.1V
-34.4V

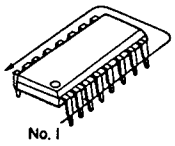
F MAIN CIRCUIT (P.C.Board: on pages 41,42)



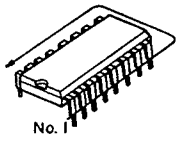

JK601
JK602
JK603
FRONT
SPEAKERS
CENTER
SURROUND
RL601
RL602
RL603
D604 MA165TA
D605 MA165TA
D654 MA165TA
R635 ½W 470
R636 ½W 470
R678 ½W 470
R731 ¼W 18
D701–704 P300D5002T
Q752 2SC3940AQSTA REGULATOR
R641 680K
R739 ¼W 18
L751 100 µH
D756 MA4068MTA
C701 0.01
E601
34.4V
62.9V
63.1V
12V
H POWER SUPPLY CIRCUIT
(P.C. Board: on page 40)
Q771,772,774–776 2SA1309AIRTA MOTOR DRIVE
Q771
Q772
Q774
Q775
Q776
Q773 2SB621AQSTA REGULATOR
D772 MA4082LTA
D773 MA165TA
D771 MA165TA
JK771
FAN MOTOR
G POWER TRANSFORMER CIRCUIT
(P.C. Board: on page 40)
CP701A
CP701B
W701
W702
W752
D721–728 P300DLF
D751–754 1SR35200TB
T751
T701
AC11.7V
AC95.2V
AC73.8V
AC 51.8V
AC25.9V
AC4.8V
Q751 UN421FTA RELAY DRIVE
RL751
JK792 AC OUTLET (SWITCHED)
JK791
AC120V (60Hz)
CN751
CN753
CN754
CN755
CN756
CN757
CN758
CN759

■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

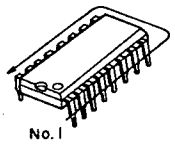
M5218AP	8 Pin
LA1832A	24 Pin
LC7218	24 Pin
LV1010N	24 Pin



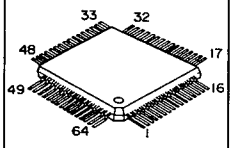
AN6558F	8 Pin
LA2785	42 Pin



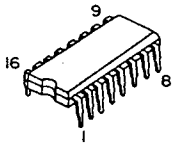
UPC4570C	8 Pin
MC14052BCP	16 Pin
NJU7312AL	28 Pin



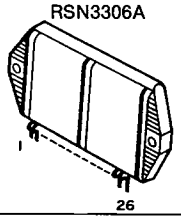
M38122M4250F



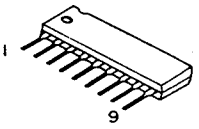
TC9214P



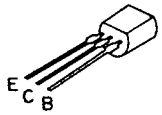
RSN3306A



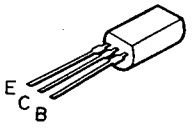
BA6218



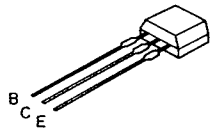
2SB621AQSTA



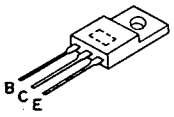
2SC3940AQSTA

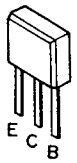


DTC114YSTP



2SD2374PQAU
2SB1548PQAU

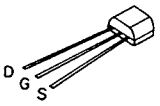




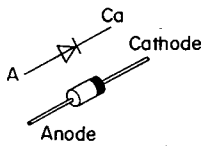
2SA1309AIRTA
2SC2785FETA
2SC2787LTA
2SC3311AIRTA
2SC3311ARSTA
2SD1915FTA

UN411FTA
UN4119TA
UN421FTA
UN4211AITA
UN4213AITA
UN4214AITA

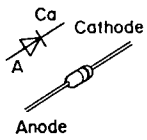
2SJ40CDTA

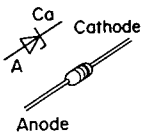


P300DLF
P300D5002T
SB3606501T



1SS291TA

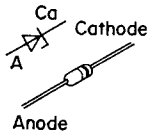




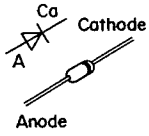
MA4030MTA
MA4039MTA
MA4047MTA
MA4051MTA
MA4056MTA
MA4062MTA

MA4068MTA
MA4075MTA
MA4082LTA

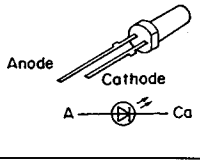
MA4100MTA
MA4150MTA
MA4220MTA



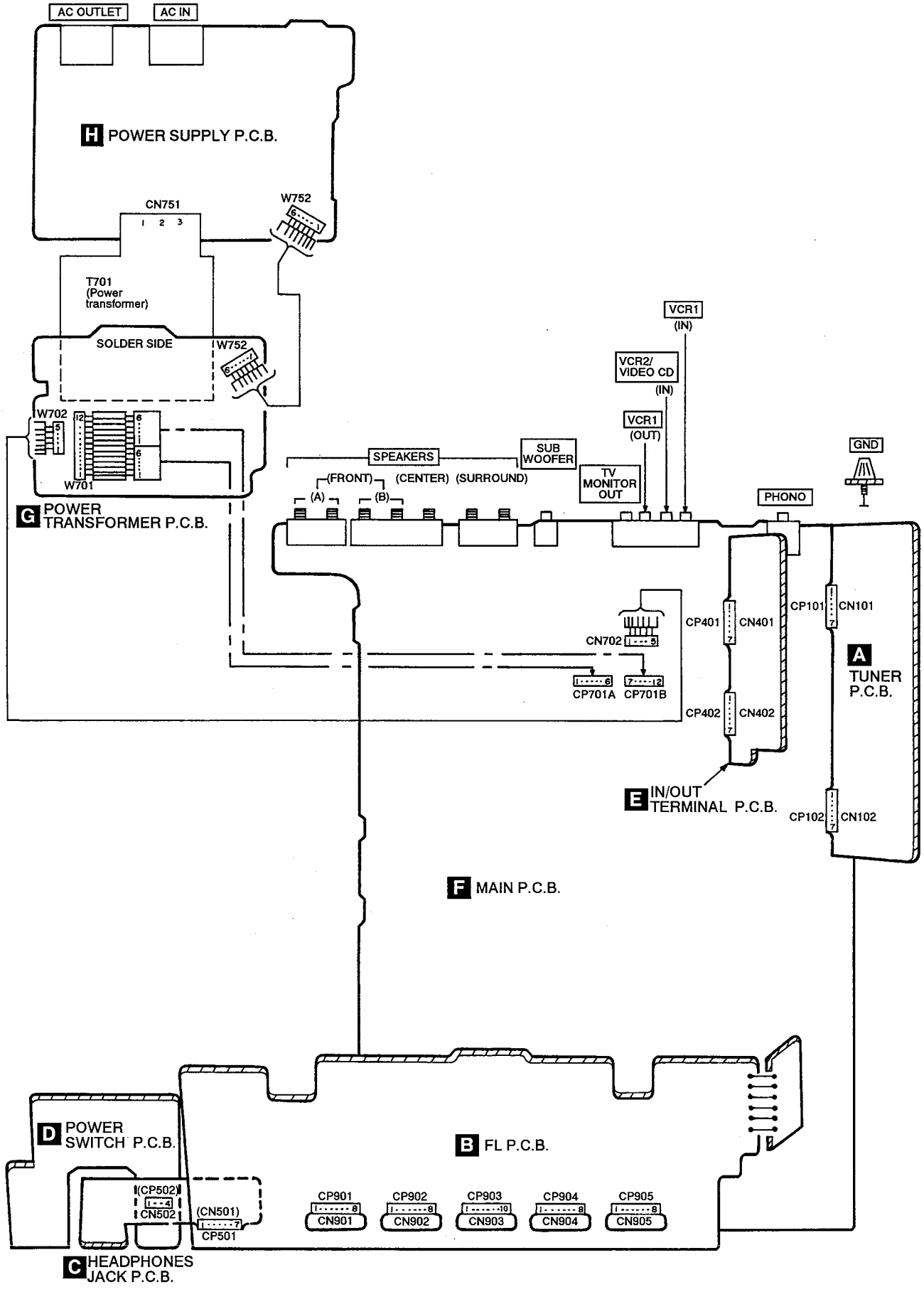
MA165TA
MA700ATA
1SR35200TB



LN41YCPHL



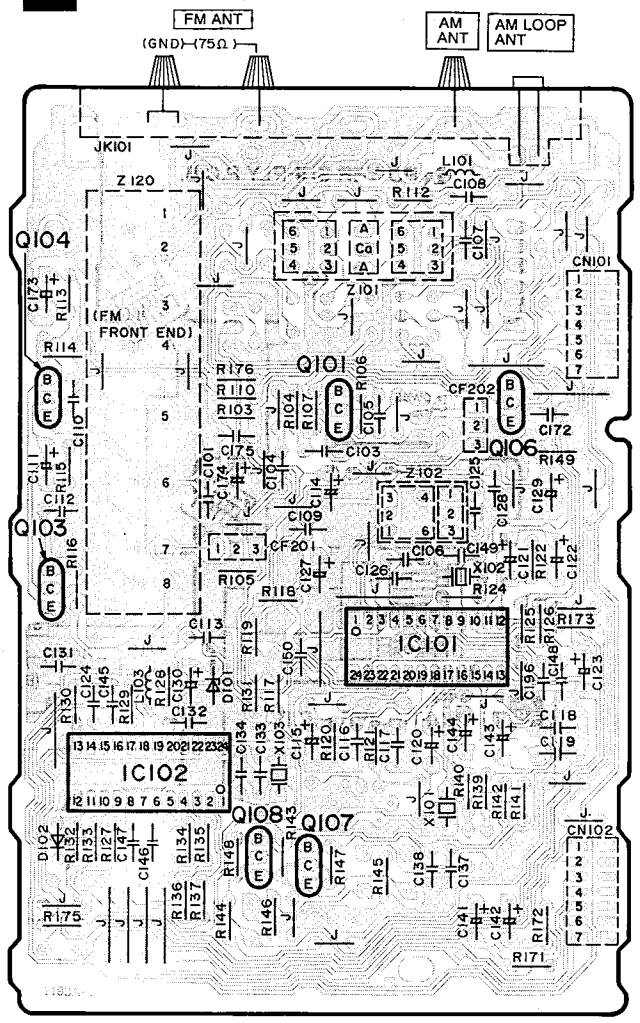
■ WIRING CONNECTION DIAGRAM



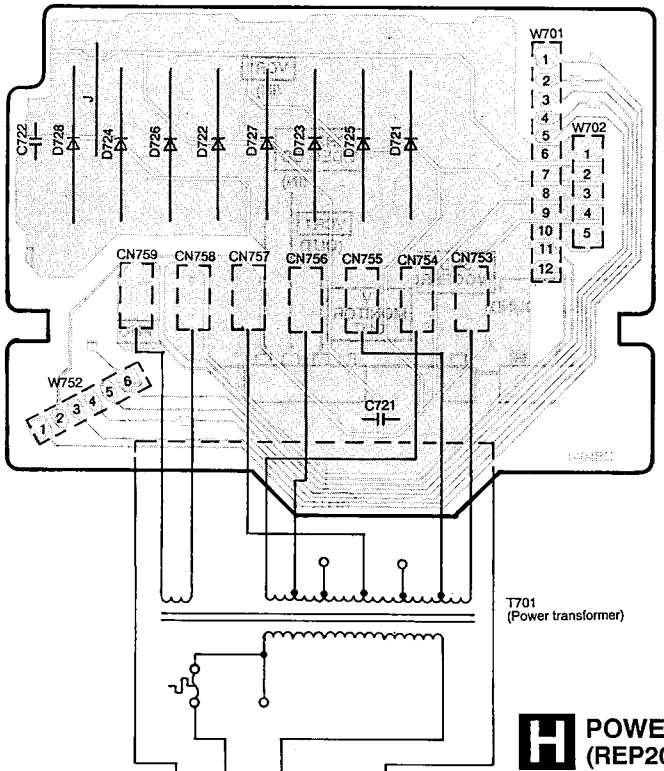
■ PRINTED CIRCUIT BOARDS

- This circuit board diagram may be modified at any time with the development of new technology.
- L1～L6, R1～R6, C1, C3, C4, C5, S1, S3, S4 and S5 in the circuit board diagram show the test points. For detail, please refer to p. 16～p. 19.

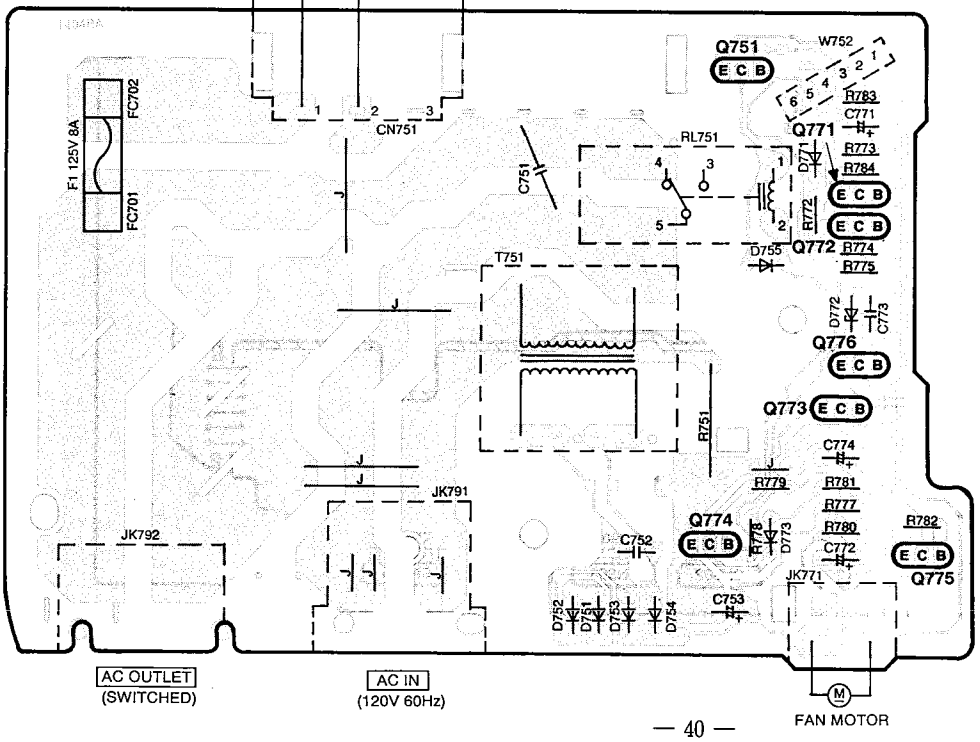
A TUNER P.C.B. (REP1750A–T)



G POWER TRANSFORMER P.C.B. (REP2052A–P)

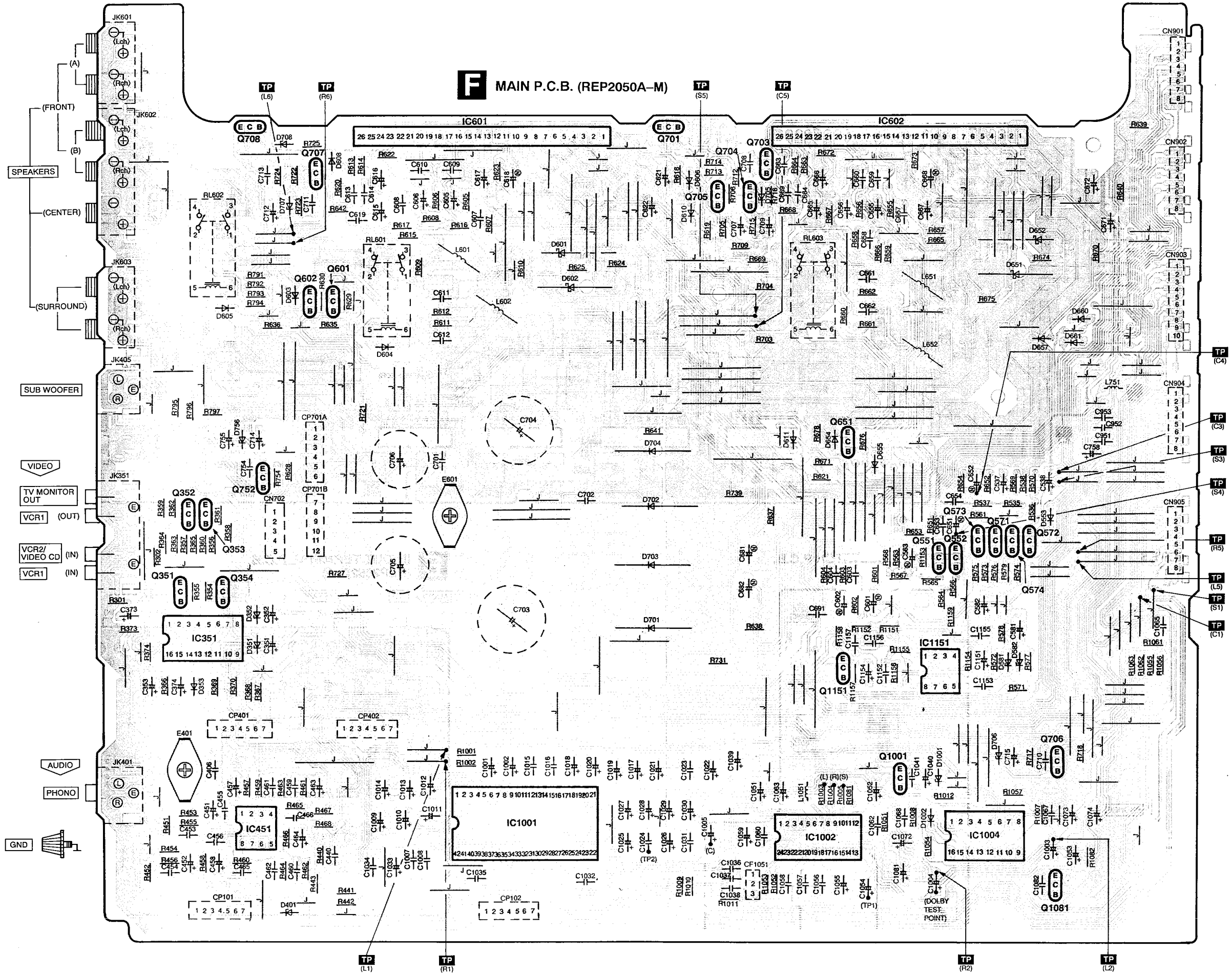


H POWER SUPPLY P.C.B. (REP2052A–P)

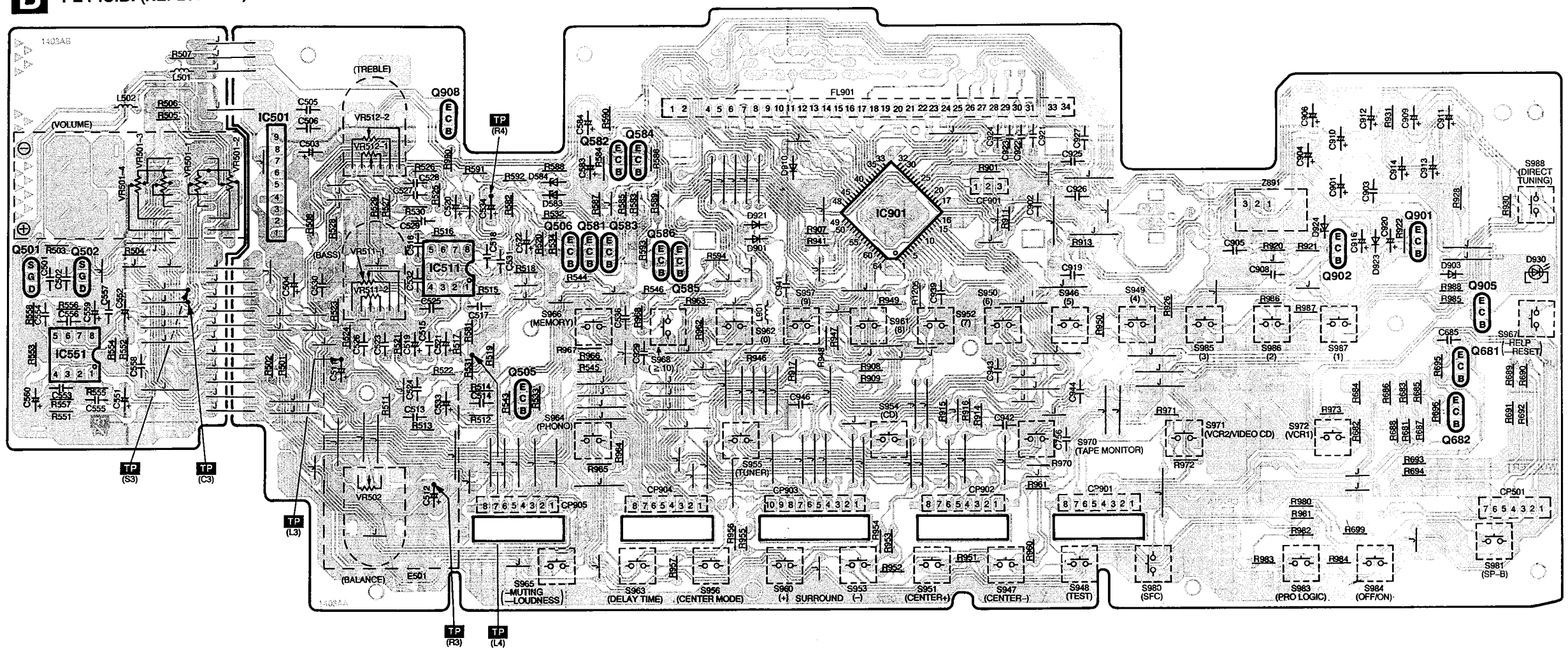


6 7 8 9 10 11 12 13 14 15

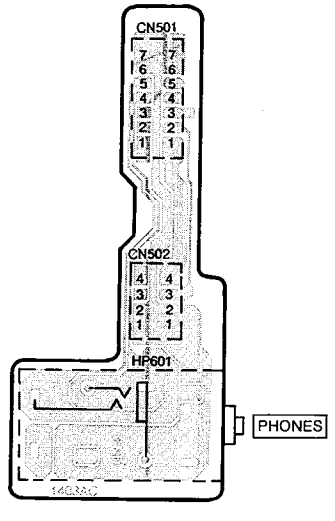
F MAIN P.C.B. (REP2050A–M)


JK601
(A)
(FRONT)
(B)
SPEAKERS
(CENTER)
(SURROUND)
SUB WOOFER
JK602
JK603
JK405
VIDEO
TV MONITOR OUT
VCR1 (OUT)
VCR2/ VIDEO CD (IN)
VCR1 (IN)
JK351
AUDIO
PHONO
GND
JK401
IC601
IC602
IC351
IC451
IC1001
IC1002
IC1004
IC1151
Q708
Q707
Q602
Q601
Q752
Q352
Q353
Q351
Q354
Q701
Q704
Q703
Q705
Q651
Q573
Q571
Q572
Q551
Q552
Q574
Q1151
Q706
Q1001
Q1081
RL602
RL601
RL603
D605
D604
E601
E401
CP701A
CP701B
CN702
CP401
CP402
CP101
CP102
CF1051
CN901
CN902
CN903
CN904
CN905
TP (L6)
TP (R6)
TP (S5)
TP (C5)
TP (C4)
TP (C3)
TP (S3)
TP (S4)
TP (R5)
TP (L5)
TP (S1)
TP (C1)
TP (L1)
TP (R1)
TP (R2)
TP (L2)
(TP1)
(TP2)
(DOLBY TEST POINT)
L601
L602
L651
L652
L751
C704
C703
C702
C701
C706
C705
D704
D703
D702
D701
R739
R731
R638
R637
R641
R727
R721
R642
R625
R624
R669
R709
R704
R703
R668
R639
R640
R672
R673
R674
R675
R671
R621
R571
R1057
R1061
R1012
R1159
R1155
R1153
R1152
R1151
R1158
R1054
R1009
R1010
R1011
R1003
R1004
R1005
R1006
R1081
R1007
R1008
R1051
R1052
R1053
R1082
R1062
R1063
R1055
R1056
C1032
C1035
C1036
C1038
C1065
C1066
C1067
C1068
C1069
C1070
C1071
C1072
C1073
C1074
C1075
C1076
C1077
C1078
C1079
C1080
C1081
C1082
C1083
C1084
C1085
C1086
C1087
C1088
C1089
C1090
C1091
C1092
C1093
C1094
C1095
C1096
C1097
C1098
C1099
C1100
C1101
C1102
C1103
C1104

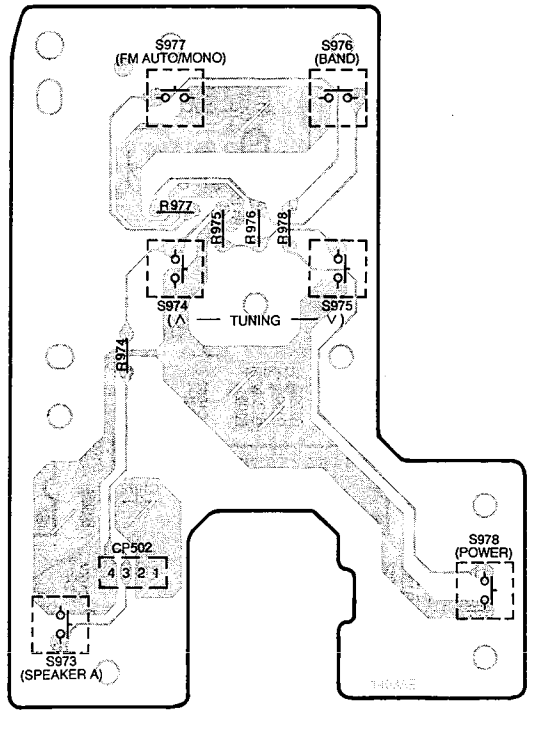
B FL P.C.B. (REP2051A–S)



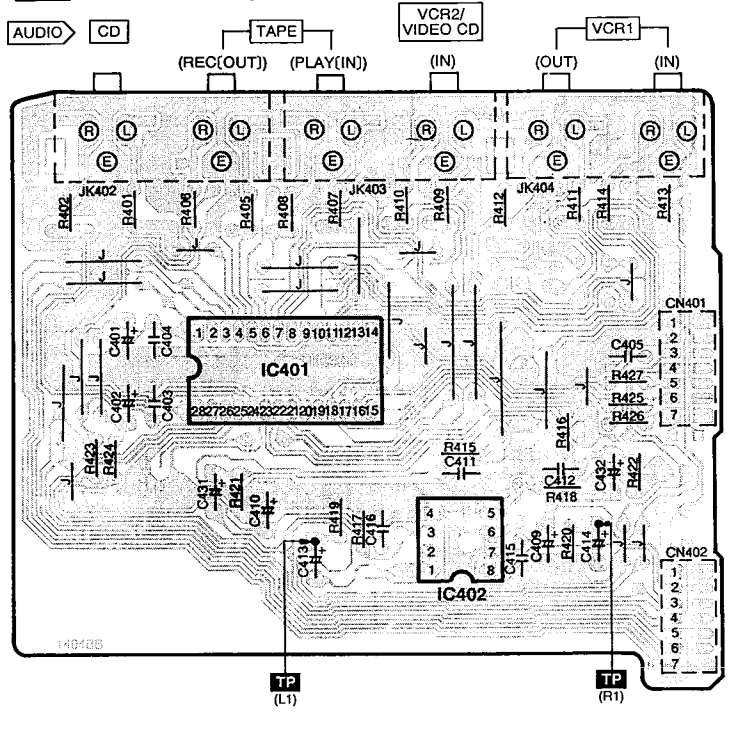
C HEADPHONES JACK P.C.B. (REP2051A–S)



D POWER SWITCH P.C.B. (REP2051A–S)



E IN/OUT TERMINAL P.C.B. (REP2052A–P)



■ REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC101	LA1832A	FM/AM IF AMP./AM OSC	
IC102	LC7218	PLL FREQ. SYNTHESIZER	
IC351	MC14052BCP	VIDEO SELECTOR	
IC401	NJU7312AL	INPUT SELECTOR	
IC402	UPC4570C	BUFFER AMP.	
IC451	AN6558F	PHONO EQ. AMP.	
IC501	BA6218	MOTOR DRIVE	
IC511	UPC4570C	TONE AMP.	
IC551	UPC4570C	PRE AMP.	
IC601, 602	RSN3306A	POWER AMP.	⚠
IC901	M38122M4250F	MICROCOMPUTER	
IC1001	LA2785	DOLBY PRO LOGIC CONTROL	
IC1002	LV1010N	DOLBY PRO LOGIC DRIVE	
IC1004	TC9214P	SIGNAL SELECTOR	
IC1151	M5218AP	BUFFER AMP. (SUB WOOFER)	
		TRANSISTOR(S)	
Q101	2SC2787L	TRANSISTOR	
Q103, 104	2SC2785FE	TRANSISTOR	
Q106	UN411FTA	TRANSISTOR	
Q107, 108	2SC3311ARSTA	TRANSISTOR	
Q351	2SC3311AIRTA	TRANSISTOR	
Q352, 353	2SA1309AIRTA	TRANSISTOR	
Q354	UN4213AITA	TRANSISTOR	
Q501, 502	2SJ40CDTA	TRANSISTOR	
Q505, 506	2SD1915FTA	TRANSISTOR	
Q551, 552	2SC3311AIRTA	TRANSISTOR	
Q571, 572	2SA1309AIRTA	TRANSISTOR	
Q573, 574	2SC3311AIRTA	TRANSISTOR	
Q581, 582	2SA1309AIRTA	TRANSISTOR	
Q583, 584	2SC3311AIRTA	TRANSISTOR	
Q585, 586	2SA1309AIRTA	TRANSISTOR	
Q601, 602	UN4119	TRANSISTOR	
Q651	UN4119	TRANSISTOR	
Q681, 682	2SD1915FTA	TRANSISTOR	
Q701	2SD2374PQAU	TRANSISTOR	⚠
Q703-705	2SC3311AIRTA	TRANSISTOR	⚠
Q706	2SC3940AQSTA	TRANSISTOR	⚠
Q707	2SB621AQSTA	TRANSISTOR	⚠
Q708	2SB1548PQAU	TRANSISTOR	⚠
Q751	UN421FTA	TRANSISTOR	
Q752	2SC3940AQSTA	TRANSISTOR	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
Q771, 772	2SA1309AIRTA	TRANSISTOR	
Q773	2SB621AQSTA	TRANSISTOR	⚠
Q774-776	2SA1309AIRTA	TRANSISTOR	
Q901	UN4214TA	TRANSISTOR	
Q902	2SA1309AIRTA	TRANSISTOR	⚠
Q905	DTC114YSTP	TRANSISTOR	
Q908	UN4211	TRANSISTOR	
Q1001	2SC3940AQSTA	TRANSISTOR	⚠
Q1081	2SA1309AIRTA	TRANSISTOR	
Q1151	2SD1915FTA	TRANSISTOR	
		DIODE(S)	
D101	MA4051MTA	DIODE	⚠
D102	MA165	DIODE	
D351, 352	MA4056MTA	DIODE	⚠
D353	MA165	DIODE	
D401	MA4075MTA	DIODE	⚠
D553	MA165	DIODE	
D581-584	MA4030MTA	DIODE	
D601, 602	SB3606501T	DIODE	
D603	MA700	DIODE	
D604-606	MA165	DIODE	
D608	MA165	DIODE	
D610, 611	1SR35200TB	DIODE	
D651, 652	SB3606501T	DIODE	
D654, 655	MA165	DIODE	
D657	MA165	DIODE	
D660, 661	1SR35200TB	DIODE	
D701-704	P300D5002T	DIODE	⚠
D705, 706	MA4062MTA	DIODE	⚠
D707	MA4220MTA	DIODE	
D708	MA4150M	DIODE	⚠
D721-728	P300DLF	DIODE	⚠
D751-754	1SR35200TB	DIODE	⚠
D755	MA165	DIODE	
D756	MA4068M	DIODE	⚠
D771	MA165	DIODE	
D772	MA4082LTA	DIODE	
D773	MA165	DIODE	
D901	1SS291TA	DIODE	
D903	MA4047MTA	DIODE	⚠
D910	MA165	DIODE	
D921	MA165	DIODE	
D923	MA165	DIODE	
D924	MA4039MTA	DIODE	⚠

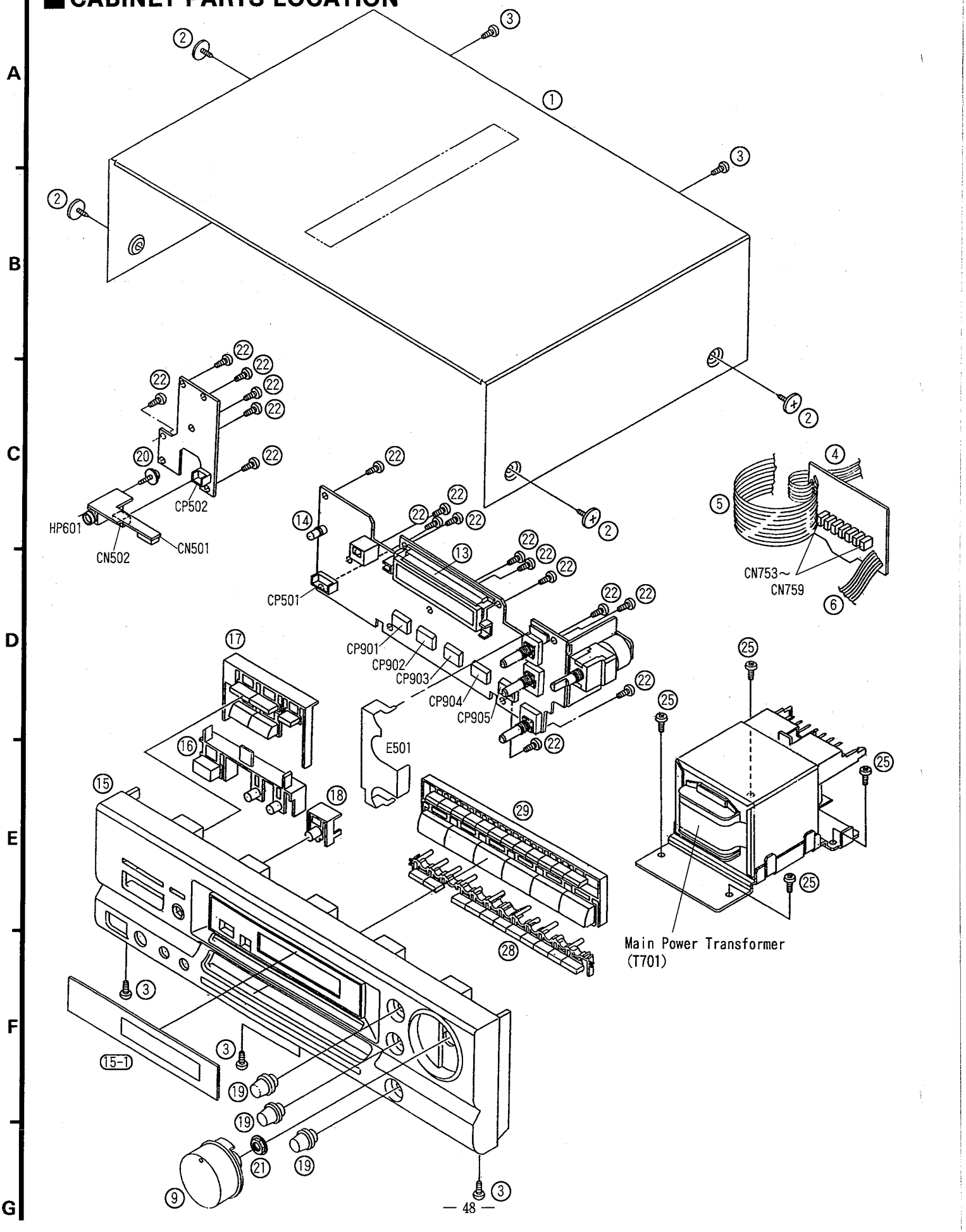
Ref. No.	Part No.	Part Name & Description	Remarks
D930	LN41YCPHL	L. E. D.	
D1001	MA4100MTA	DIODE	⚠
D1002	MA700	DIODE	
		VARIABLE RESISTOR(S)	
VR501	EUWMR0026B15	VOLUME CONTROL	
VR502	EVJ02QF02G15	BALANCE CONTROL	
VR511, 512	EVJYA1FA5C15	TONE CONTROL	
		COIL(S)	
L101	ELESN1R5MA	COIL	
L103	ELEXTR47MA9	COIL	
L501, 502	RLQZP1R0KT-Y	COIL	
L601, 602	RLQYR73M	COIL	
L651, 652	RLQYR73M	COIL	
L751	RLQB101JTA-Y	COIL	
L901	RLQB101JTA-Y	COIL	
L1051	RLQB101JTA-Y	COIL	
		TRANSFORMER(S)	
T701	RTP1P5C021-V	POWER TRANSFORMER(MAIN)	⚠
T751	RTP1H5C001-V	POWER TRANSFORMER(SUB)	⚠
		COMPONENT COMBINATION(S)	
Z101	RLA2Z002M-T	COMPONENT COMBINATION	
Z102	RLI2Z006M-T	COMPONENT COMBINATION	
Z891	RCDHC-278N	REMOTE SENSOR	
		FILTER(S) AND OSCILLATOR(S)	
CF201, 202	RLFFETMGD01L	FILTER	
CF901	RSXY6M00M03T	OSCILLATOR(6MHz)	
CF1051	EF0EC8004T4	OSCILLATOR(8MHz)	
X101	RSXZ456KM07M	OSCILLATOR(456KHz)	
X102	RLFDGTD01I	OSCILLATOR(10.65MHz)	
X103	RSXC7M20S05T	OSCILLATOR(7.2MHz)	
		DISPLAY TUBE(S)	
FL901	RSL0199-F	DISPLAY TUBE	
		FM FRONT END PACK ASS'Y(S)	
Z120	RAL0006	FM FRONT END	
		FUSE(S)	
F1	XBA1C80NBAU	FUSE, 125V 8A	⚠

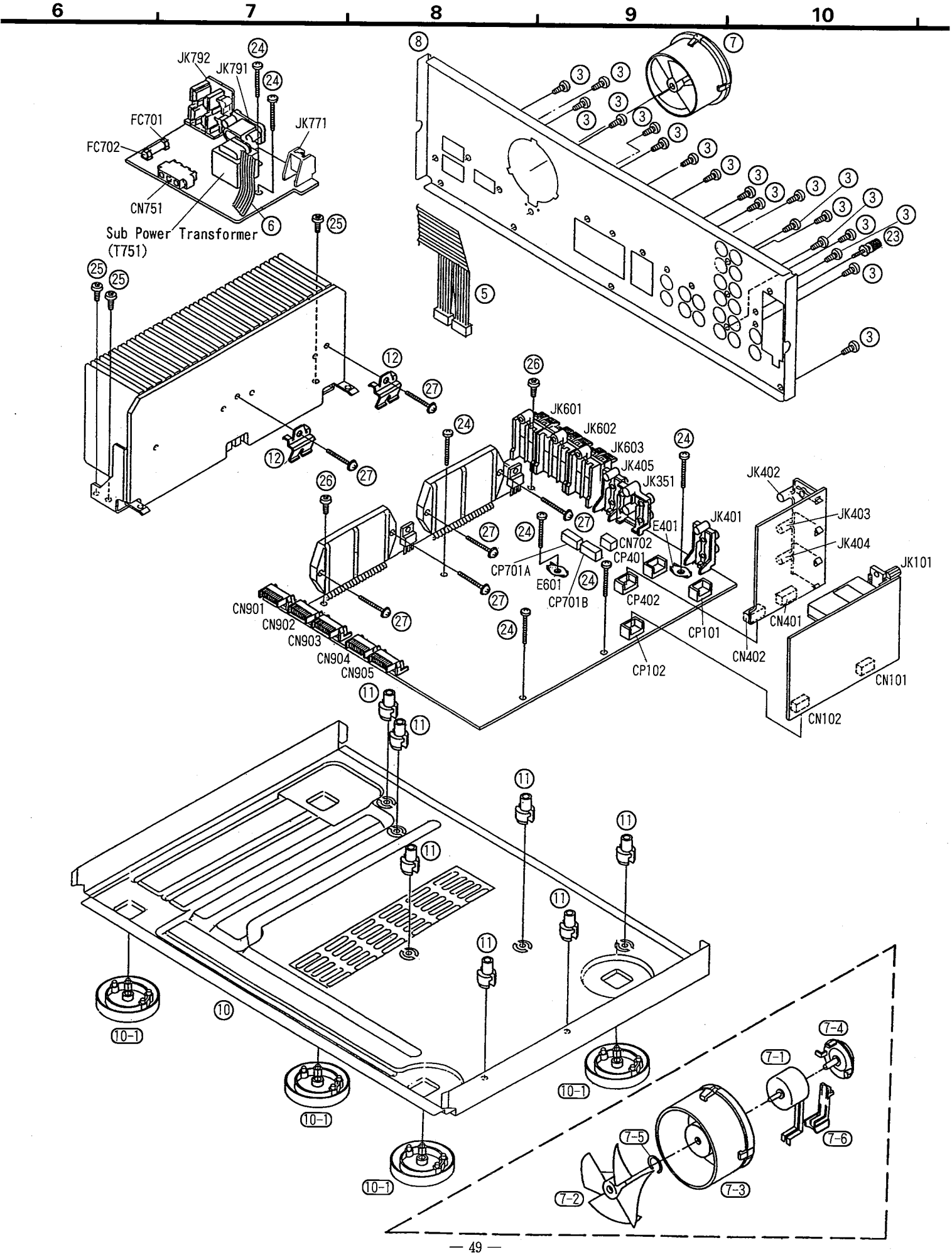
Ref. No.	Part No.	Part Name & Description	Remarks
		SWITCH(ES)	
S946	EVQ21405R	NUMERIC(5)	
S947	EVQ21405R	CENTER DOWN	
S948	EVQ21405R	TEST	
S949	EVQ21405R	NUMERIC(4)	
S950	EVQ21405R	NUMERIC(6)	
S951	EVQ21405R	CENTER UP	
S952	EVQ21405R	NUMERIC(7)	
S953	EVQ21405R	SURROUND DOWN	
S954	EVQ21405R	CD	
S955	EVQ21405R	TUNER	
S956	EVQ21405R	CENTER MODE	
S957	EVQ21405R	NUMERIC(9)	
S960	EVQ21405R	SURROUND UP	
S961	EVQ21405R	NUMERIC(8)	
S962	EVQ21405R	NUMERIC(0)	
S963	EVQ21405R	DELAY TIME	
S964	EVQ21405R	PHONO	
S965	EVQ21405R	MUTING/-LOUDNESS	
S966	EVQ21405R	MEMORY	
S967	EVQ21405R	HELP/-RESET	
S968	EVQ21405R	NUMERIC(>10)	
S970	EVQ21405R	TAPE MONITOR	
S971	EVQ21405R	VCR2/VIDEO CD	
S972	EVQ21405R	VCR1	
S973	EVQ21405R	SPEAKERS A	
S974	EVQ21405R	TUNING UP	
S975	EVQ21405R	TUNING DOWN	
S976	EVQ21405R	BAND	
S977	EVQ21405R	FM AUTO/MONO	
S978	EVQ21405R	POWER	
S980	EVQ21405R	SFC MODE	
S981	EVQ21405R	SPEAKERS B	
S983	EVQ21405R	PRO LOGIC	
S984	EVQ21405R	SFC ON/OFF	
S985	EVQ21405R	NUMERIC(3)	
S986	EVQ21405R	NUMERIC(2)	
S987	EVQ21405R	NUMERIC(1)	
S988	EVQ21405R	DIRECT TUNING	
		RELAY(S)	
RL601-603	RSY0013M-0	RELAY	⚠
RL751	RSY0019M-0	RELAY	⚠
		CONNECTOR(S) AND SOCKET(S)	
CN101, 102	RJU057W007	SOCKET(7P)	
CN401, 402	RJU057W007	SOCKET(7P)	
CN501	RJU057W007	SOCKET(7P)	

Ref. No.	Part No.	Part Name & Description	Remarks
CN502	RJU057W004	SOCKET (4P)	
CN702	RJS1A6605	CONNECTOR (5P)	
CN751	SJS305-1	CONNECTOR (3P)	
CN753-759	RJS1A1101T1	CONNECTOR (1P)	
CN901, 902	RJU003KD08M1	SOCKET (8P)	
CN903	RJU003KD10M1	SOCKET (10P)	
CN904, 905	RJU003KD08M1	SOCKET (8P)	
CP101, 102	RJT057W007-1	CONNECTOR (7P)	
CP401, 402	RJT057W007-1	CONNECTOR (7P)	
CP501	RJT057W007-1	CONNECTOR (7P)	
CP502	RJT057W004-1	CONNECTOR (4P)	
CP701A	RJT039W06T	CONNECTOR (6P)	
CP701B	RJT039W06T	CONNECTOR (6P)	
CP901, 902	RJT003KD08-1	CONNECTOR (8P)	
CP903	RJT003KD10-1	CONNECTOR (10P)	
CP904, 905	RJT003KD08-1	CONNECTOR (8P)	
		JACK (S) AND TERMINAL (S)	
JK101	RJH4405-1M	ANT TERMINAL	
JK351	SJF3069-3N	TV MONITOR OUT/VIDEO	
JK401	SJF3068-7N	PHONO TERMINAL	
JK402	SJF3069N	CD IN/REC OUT TERMINAL	
JK403	SJF3069N	PLAY IN/VCR2 IN	
JK404	SJF3069N	VCR1 OUT/VCR1 IN	
JK405	SJF3068-7N	SUB WOOFER OUT	
JK601	RJR0054	FRONT A SPEAKER TERMINAL	
JK602	RJH5601	FRONT B SPEAKER TERMINAL	
JK603	RJR0054	SURROUND SPEAKER TERMINAL	
JK771	RJS1A7402-1	FAN MOTOR	
JK791	SJSD16	AC INLET	⚠
JK792	RJS2A0102-1S	AC OUTLET	⚠
HP601	RJJ63TA01	HEADPHONES JACK	
		GND PLATE (S)	
E401	SNE1004-2	GND PLATE	
E501	RSC0413	GND PLATE	
E601	SNE1004-2	GND PLATE	
		FUSE HOLDER (S)	
FC701, 702	EYF52BC	FUSE HOLDER	

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	RKM0041A-K	CABINET	
2	SNE2129-3	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	REZ0684	FLAT CABLE (5P) (W702)	
5	RFKEUG75PP-K	CONNECTOR ASS'Y (12P) (W701)	
6	RWJ1806110KK	FLAT CABLE (6P) (W752)	
7	REM0020-1	FAN MOTOR UNIT	
7-1	MDN-4RB4MRC	FAN MOTOR	
7-2	SHE232-1	FAN	
7-3	RMQ0209-K	FAN CASE	
7-4	RMQ0208-K	FAN CAP	
7-5	SUS271	SPRING	
7-6	RMQ0212-K	FAN TERMINAL CAP	
8	RGR0214A-A1	REAR PANEL	(P)
8	RGR0214A-B1	REAR PANEL	(PC)
9	RGW0163-K	VOLUME KNOB	
10	RFKJAGX470PK	BOTTOM CHASSIS ASS'Y	
10-1	RKA0053-A	FOOT	
11	RKQ0089	P.C.B. SUPPORT	
12	RMC0158	TRANSISTOR HOLDER	
13	RMN0304	FL HOLDER	
14	RMN0313-J	LED HOLDER	
15	RFKGAGX690PK	FRONT PANEL ASS'Y	
15-1	RKW0388-Q	TRANSPARENT PLATE	
16	RFKNAGX690PA	MODE BUTTON ASS'Y	
17	RFKNAGX690PB	TUNING BUTTON ASS'Y	
18	RGU1174-Q	HELP BUTTON	
19	RGW0175-1K	BALANCE/BASS/TREBLE KNOB	
20	RHD26016	SCREW	
21	RHN90001	NUT	
22	XTBS26+8J	SCREW	
23	SNE2123	GND TERMINAL	
24	XTB3+20JFZ	SCREW	
25	XTB3+8JFZ	SCREW	
26	XTWS3+8T	SCREW	
27	XTW3+15T	SCREW	
28	RFKNAGX690PC	SELECTOR BUTTON (1) ASS'Y	
29	RFKNAGX690PD	SELECTOR BUTTON (2) ASS'Y	

■CABINET PARTS LOCATION




6
7
8
9
10
JK792
JK791
FC701
FC702
JK771
CN751
Sub Power Transformer
(T751)
JK601
JK602
JK603
JK405
JK351
JK402
JK403
JK404
JK401
E401
CN702
CP401
CP701A
E601
CP701B
CP402
CP101
CP102
CN401
CN402
JK101
CN101
CN102
CN901
CN902
CN903
CN904
CN905
10-1
7-1
7-2
7-3
7-4
7-5
7-6

■ RESISTORS AND CAPACITORS

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R103	ERDS2TJ151	1/4W 150
R104	ERDS2TJ102	1/4W 1K
R105	ERDS2TJ471	1/4W 470
R106	ERDS2TJ224T	1/4W 220K
R107	ERDS2TJ471	1/4W 470
R110	ERDS2TJ102	1/4W 1K
R112	ERDS2TJ104	1/4W 100K
R113	ERDS2TJ103	1/4W 10K
R114	ERDS2TJ562	1/4W 5.6K
R115	ERDS2TJ561	1/4W 560
R116	ERDS2TJ102	1/4W 1K
R117	ERDS2TJ104	1/4W 100K
R118	ERDS2TJ562	1/4W 5.6K
R119	ERDS2TJ822	1/4W 8.2K
R120	ERDS2TJ473	1/4W 47K
R121	ERDS2TJ332	1/4W 3.3K
R122	ERDS2TJ272T	1/4W 2.7K
R124	ERDS2TJ271	1/4W 270
R125, 126	ERDS2TJ472	1/4W 4.7K
R127	ERDS2TJ103	1/4W 10K
R128	ERDS2TJ820	1/4W 82
R129	ERDS2TJ473	1/4W 47K
R130, 131	ERDS2TJ102	1/4W 1K
R132	ERDS2TJ103	1/4W 10K
R133-137	ERDS2TJ102	1/4W 1K
R139, 140	ERDS2TJ272T	1/4W 2.7K
R141, 142	ERDS2TJ103	1/4W 10K
R143, 144	ERDS2TJ222	1/4W 2.2K
R145, 146	ERDS2TJ102	1/4W 1K
R147, 148	ERDS2TJ474	1/4W 470K
R149	ERDS2TJ680T	1/4W 68
R171, 172	ERDS2TJ102	1/4W 1K
R173	ERDS2TJ471	1/4W 470
R175	ERDS2TJ102	1/4W 1K
R176	ERDS2TJ391	1/4W 390
R301, 302	ERDS2TJ101	1/4W 100
R354	ERDS2TJ332	1/4W 3.3K
R355	ERDS2TJ470	1/4W 47
R356	ERDS2TJ152	1/4W 1.5K
R357	ERDS2TJ470	1/4W 47
R358	ERDS2TJ471	1/4W 470
R359	ERDS2TJ2R2T	1/4W 2.2
R360	ERDS2TJ470	1/4W 47
R361	ERDS2TJ471	1/4W 470
R362	ERDS2TJ2R2T	1/4W 2.2
R363	ERDS2TJ332	1/4W 3.3K
R364	ERDS2TJ561	1/4W 560
R365	ERDS2TJ332	1/4W 3.3K
R366	ERDS2TJ104	1/4W 100K
R367, 368	ERDS2TJ103	1/4W 10K
R369, 370	ERDS1FVJ271T	1/2W 270 ⚠
R373, 374	ERDS2TJ103	1/4W 10K
R401, 402	ERDS2TJ102	1/4W 1K
R405-416	ERDS2TJ102	1/4W 1K
R417, 418	ERDS2TJ473	1/4W 47K
R419-422	ERDS2TJ104	1/4W 100K
R423, 424	ERDS2TJ102	1/4W 1K
R425-427	ERDS2TJ103	1/4W 10K
R440	ERDS1FVJ820T	1/2W 82 ⚠
R441, 442	ERDS2TJ473	1/4W 47K
R443	ERDS2TJ330	1/4W 33
R451, 452	ERDS2TJ224T	1/4W 220K
R453, 454	ERDS2TJ821	1/4W 820
R455, 456	ERDS2TJ563	1/4W 56K
R457, 458	ERDS2TJ271	1/4W 270
R459, 460	ERDS2TJ680T	1/4W 68
R461, 462	ERDS2TJ184T	1/4W 180K
R463, 464	ERDS2TJ123	1/4W 12K
R465, 466	ERDS2TJ563	1/4W 56K
R467, 468	ERDS2TJ102	1/4W 1K
R501, 502	ERDS2TJ222	1/4W 2.2K
R503-506	ERDS2TJ103	1/4W 10K
R507	ERDS2TJ153	1/4W 15K
R508	ERDS1FVJ2R2T	1/2W 2.2 ⚠
R511, 512	ERDS2TJ471	1/4W 470
R513-516	ERDS2TJ474	1/4W 470K
R517, 518	ERDS2TJ222	1/4W 2.2K
R519, 520	ERDS2TJ392T	1/4W 3.9K
R521, 522	ERDS2TJ223	1/4W 22K
R523, 524	ERDS2TJ392T	1/4W 3.9K
R525, 526	ERDS2TJ222	1/4W 2.2K
R527, 528	ERDS2TJ122	1/4W 1.2K
R529, 530	ERDS2TJ273	1/4W 27K
R531, 532	ERDS2TJ222	1/4W 2.2K
R533, 534	ERDS2TJ272T	1/4W 2.7K
R535, 536	ERDS2TJ332	1/4W 3.3K
R537, 538	ERDS2TJ103	1/4W 10K
R543, 544	ERDS2TJ102	1/4W 1K
R545	ERDS2TJ824	1/4W 820K
R546	ERDS2TJ103	1/4W 10K
R551, 552	ERDS2TJ102	1/4W 1K
R553, 554	ERDS2TJ104	1/4W 100K
R555, 556	ERDS2TJ223	1/4W 22K
R557	ERDS2TJ391	1/4W 390
R558	ERDS2TJ561	1/4W 560
R561	ERDS2TJ332	1/4W 3.3K
R563	ERDS2TJ332	1/4W 3.3K
R564	ERDS2TJ472	1/4W 4.7K
R565, 566	ERDS2TJ102	1/4W 1K
R567	ERDS2TJ474	1/4W 470K
R568	ERDS2TJ103	1/4W 10K
R569, 570	ERDS2TJ102	1/4W 1K
R571, 572	ERDS2TJ222	1/4W 2.2K
R573-578	ERDS2TJ102	1/4W 1K
R579	ERDS2TJ182	1/4W 1.8K
R581, 582	ERDS2TJ471	1/4W 470
R583-588	ERDS2TJ102	1/4W 1K
R589	ERDS2TJ122	1/4W 1.2K
R590	ERDS2TJ472	1/4W 4.7K
R591, 592	ERDS2TJ222	1/4W 2.2K
R593	ERDS2TJ392T	1/4W 3.9K
R594	ERDS2TJ473	1/4W 47K
R601, 602	ERDS2TJ102	1/4W 1K
R603, 604	ERDS2TJ563	1/4W 56K
R605, 606	ERDS2TJ182	1/4W 1.8K
R607, 608	ERDS2TJ563	1/4W 56K
R609, 610	ERDS2TJ470	1/4W 47
R611, 612	ERDS1FVJ100T	1/2W 10 ⚠
R613, 614	ERDS2TJ102	1/4W 1K
R615	ERDS2TJ184T	1/4W 180K
R616	ERDS2TJ154	1/4W 150K
R617, 618	ERDS2TJ473	1/4W 47K
R619	ERDS2TJ223	1/4W 22K
R620	ERD25FJ220	1/4W 22 ⚠
R621	ERDS2TJ183T	1/4W 18K
R622	ERDS2TJ124T	1/4W 120K
R623	ERDS2TJ684	1/4W 680K
R624, 625	ERDS2TJ563	1/4W 56K
R628-630	ERDS2TJ223	1/4W 22K
R635, 636	ERDS1FVJ471T	1/2W 470 ⚠
R637-640	ERG1SJ101E	1W 100
R641	ERDS2TJ684	1/4W 680K
R642	ERDS2TJ472	1/4W 4.7K
R651, 652	ERDS2TJ102	1/4W 1K
R653, 654	ERDS2TJ563	1/4W 56K
R655, 656	ERDS2TJ182	1/4W 1.8K
R657, 658	ERDS2TJ563	1/4W 56K
R659, 660	ERDS2TJ470	1/4W 47
R661, 662	ERDS1FVJ100T	1/2W 10 ⚠
R663, 664	ERDS2TJ102	1/4W 1K
R665	ERDS2TJ154	1/4W 150K
R666	ERDS2TJ184T	1/4W 180K
R667, 668	ERDS2TJ473	1/4W 47K
R669	ERDS2TJ223	1/4W 22K

Ref. No.	Part No.	Values & Remarks
R670	ERD25FJ220	1/4W 22 ⚠
R671	ERDS2TJ183T	1/4W 18K
R672	ERDS2TJ124T	1/4W 120K
R673	ERDS2TJ684	1/4W 680K
R674, 675	ERDS2TJ563	1/4W 56K
R676	ERDS2TJ223	1/4W 22K
R678	ERDS1FVJ471T	1/2W 470 ⚠
R681-694	ERDS2TJ270T	1/4W 27
R695, 696	ERDS2TJ102	1/4W 1K ⚠
R699	ERDS2TJ332	1/4W 3.3K
R703, 704	ERDS1FVJ3R9T	1/2W 3.9 ⚠
R705	ERDS2TJ472	1/4W 4.7K
R706	ERDS2TJ102	1/4W 1K
R709	ERD25FVJ221T	1/4W 220 ⚠
R712	ERDS2TJ472	1/4W 4.7K
R713, 714	ERDS2TJ1R5T	1/4W 1.5
R715	ERDS2TJ752T	1/4W 7.5K
R716	ERDS2TJ682T	1/4W 6.8K
R717	ERDS1FVJ220T	1/2W 22 ⚠
R718	ERDS2TJ182	1/4W 1.8K
R721	ERG1SJ100E	1W 10 ⚠
R722	ERD25FJ101	1/4W 100 ⚠
R723	ERDS2TJ472	1/4W 4.7K
R724	ERG1SJ120E	1W 12
R725	ERDS2TJ681	1/4W 680
R727	ERDS1FVJ6R8T	1/2W 6.8 ⚠
R731	ERD25FVJ180T	1/4W 18 ⚠
R739	ERD25FVJ180T	1/4W 18 ⚠
R751	ERC12ZGK335	1/2W 3.3M ⚠
R754	ERDS2TJ102	1/4W 1K
R772	ERDS2TJ104	1/4W 100K
R773	ERDS2TJ103	1/4W 10K
R774	ERDS2TJ223	1/4W 22K
R775	ERDS2TJ472	1/4W 4.7K
R777	ERDS2TJ150T	1/4W 15
R778	ERDS2TJ222	1/4W 2.2K
R779	ERDS2TJ103	1/4W 10K
R780, 781	ERDS2TJ473	1/4W 47K
R782	ERDS2TJ153	1/4W 15K
R783	ERDS2TJ103	1/4W 10K
R784	ERDS2TJ335T	1/4W 3.3M
R791-796	ERDS2TJ223	1/4W 22K
R797	ERDS2TJ682T	1/4W 6.8K
R901	ERDS2TJ102	1/4W 1K
R907-909	ERDS2TJ104	1/4W 100K
R911	ERDS2TJ104	1/4W 100K
R913	ERDS2TJ104	1/4W 100K
R914-917	ERDS2TJ103	1/4W 10K
R920	ERDS2TJ271	1/4W 270
R921	ERDS2EJ121	1/4W 120
R922	ERDS2TJ472	1/4W 4.7K
R926	ERDS2TJ104	1/4W 100K

Ref. No.	Part No.	Values & Remarks
R928	ERDS2TJ151	1/4W 150
R930, 931	ERDS2TJ101	1/4W 100
R941	ERDS2TJ104	1/4W 100K
R946-949	ERDS2TJ103	1/4W 10K
R950	ERDS2TJ102	1/4W 1K
R951	ERDS2TJ122	1/4W 1.2K
R952	ERDS2TJ152	1/4W 1.5K
R953	ERDS2TJ182	1/4W 1.8K
R954	ERDS2TJ222	1/4W 2.2K
R955	ERDS2TJ332	1/4W 3.3K
R956	ERDS2TJ472	1/4W 4.7K
R957	ERDS2TJ682T	1/4W 6.8K
R960	ERDS2TJ102	1/4W 1K
R961	ERDS2TJ122	1/4W 1.2K
R962	ERDS2TJ152	1/4W 1.5K
R963	ERDS2TJ182	1/4W 1.8K
R964	ERDS2TJ222	1/4W 2.2K
R965	ERDS2TJ332	1/4W 3.3K
R966	ERDS2TJ472	1/4W 4.7K
R967	ERDS2TJ682T	1/4W 6.8K
R968	ERDS2TJ123	1/4W 12K
R970	ERDS2TJ102	1/4W 1K
R971	ERDS2TJ122	1/4W 1.2K
R972	ERDS2TJ152	1/4W 1.5K
R973	ERDS2TJ182	1/4W 1.8K
R974	ERDS2TJ222	1/4W 2.2K
R975	ERDS2TJ332	1/4W 3.3K
R976	ERDS2TJ472	1/4W 4.7K
R977	ERDS2TJ682T	1/4W 6.8K
R978	ERDS2TJ123	1/4W 12K
R980	ERDS2TJ102	1/4W 1K
R981	ERDS2TJ122	1/4W 1.2K
R982	ERDS2TJ152	1/4W 1.5K
R983	ERDS2TJ182	1/4W 1.8K
R984	ERDS2TJ222	1/4W 2.2K
R985	ERDS2TJ332	1/4W 3.3K
R986	ERDS2TJ472	1/4W 4.7K
R987	ERDS2TJ682T	1/4W 6.8K
R988	ERDS2TJ123	1/4W 12K
R990	ERDS2TJ153	1/4W 15K
R1001-1004	ERDS2TJ102	1/4W 1K
R1005	ERDS2TJ203T	1/4W 20K
R1007, 1008	ERDS2TJ473	1/4W 47K
R1009-1011	ERDS2TJ332	1/4W 3.3K
R1012	ERDS2TJ102	1/4W 1K
R1051	ERDS2TJ393	1/4W 39K
R1052	ERDS2TJ105T	1/4W 1M
R1053	ERDS2TJ102	1/4W 1K
R1054	ERDS2TJ104	1/4W 100K
R1055, 1056	ERDS2TJ473	1/4W 47K
R1057	ERDS2TJ103	1/4W 10K
R1061	ERDS2TJ222	1/4W 2.2K

Ref. No.	Part No.	Values & Remarks
R1062	ERDS2TJ273	1/4W 27K
R1063	ERDS2TJ332	1/4W 3.3K
R1081	ERDS2TJ104	1/4W 100K
R1082	ERDS2TJ474	1/4W 470K
R1151-1153	ERDS2TJ473	1/4W 47K
R1154	ERDS2TJ333	1/4W 33K
R1155, 1156	ERDS2TJ393	1/4W 39K
R1157	ERDS2TJ222	1/4W 2.2K
R1158	ERDS2TJ104	1/4W 100K
R1159	ERDS2TJ103	1/4W 10K
R1205	ERDS2TJ102	1/4W 1K
		CAPACITORS
C101	ECBT1C103NS5	16V 0.01U
C103	ECBT1C103NS5	16V 0.01U
C104, 105	ECBT1H102KB5	50V 1000P
C106	ECBT1C103NS5	16V 0.01U
C107	ECBT1H473ZF5	50V 0.047U
C108	ECBT1H8R2KC5	50V 8.2P
C109, 110	ECBT1C103NS5	16V 0.01U
C111	ECEA1EKA4R7B	25V 4.7U
C112	ECBT1C103NS5	16V 0.01U
C113	ECBT1H102KB5	50V 1000P
C114	RCE1HKA3R3BG	50V 3.3U
C115	ECEA1EKA4R7B	25V 4.7U
C116	ECBT1C822MS5	16V 8200P
C117	ECQB1H821JF3	50V 820P
C118, 119	ECFR1E183KR	25V 0.018U
C120, 121	ECEA1HKA010B	50V 1U
C122	ECEA1HKA2R2B	50V 2.2U
C123	ECEA1HKA010B	50V 1U
C124	ECBT1H102KB5	50V 1000P
C125	ECBT1H150JC5	50V 15P
C126	ECBT1H104ZF5	50V 0.1U
C127	RCE1CKA220BG	16V 22U
C128	ECBT1C103NS5	16V 0.01U
C129, 130	RCE0JKA101BV	6.3V 100U
C131	ECBT1C103NS5	16V 0.01U
C132	ECBT1H102KB5	50V 1000P
C133, 134	ECBT1H270JU5	50V 27P
C137, 138	ECBT1H271KB5	50V 270P
C141-144	ECEA1HKA010B	50V 1U
C145	ECBT1H220JC5	50V 22P
C146	ECBT1H331KB5	50V 330P
C147	ECBT1H102KB5	50V 1000P
C148, 149	ECBT1C103NS5	16V 0.01U
C150	ECBT1H104ZF5	50V 0.1U
C172	ECBT1H331KB5	50V 330P
C173	RCE1CKA220BG	16V 22U
C174	RCE1CKA100BG	16V 10U
C175	ECBT1C103NS5	16V 0.01U

Ref. No.	Part No.	Values & Remarks
C196	ECBT1H102KB5	50V 1000P
C351, 352	RCE0JKA101BV	6.3V 100U
C353	RCE1CKA100BG	16V 10U
C373, 374	RCE1CKA470BG	16V 47U
C401, 402	ECEA1VKA4R7B	35V 4.7U
C403, 404	ECBT1E103ZF	25V 0.01U
C405, 406	ECBT1H101KB5	50V 100P
C409, 410	RCE1CKA220BG	16V 22U
C411, 412	ECBT1H101KB5	50V 100P
C413, 414	RCE1CKA100BG	16V 10U
C415, 416	ECBT1E103ZF	25V 0.01U
C431, 432	RCE1CKA100BG	16V 10U
C440	ECBT1E103ZF	25V 0.01U
C451, 452	ECEA1VKA4R7B	35V 4.7U
C453, 454	ECBT1H101KB5	50V 100P
C455, 456	ECBT1H102KB5	50V 1000P
C457, 458	RCE1AKA330BG	10V 33U
C459, 460	ECFR1E223KR	25V 0.022U
C461, 462	ECFR1E682KR	25V 6800P
C463, 464	ECEA1VKA4R7B	35V 4.7U
C465, 466	ECBT1E103ZF	25V 0.01U
C501, 502	ECFR1E333KR	25V 0.033U
C503, 504	RCE0JKA101BV	6.3V 100U
C505, 506	ECFR1C104MR	16V 0.1U
C511, 512	RCE1HKA3R3BG	50V 3.3U
C513, 514	ECBT1H150J5	50V 15P
C515, 516	ECBT1H221KB5	50V 220P
C517, 518	ECBT1H330J5	50V 33P
C519-522	ECEA1VKA4R7B	35V 4.7U
C523, 524	ECFR1E123KR	25V 0.012U
C525, 526	ECQV1H683JM3	50V 0.068U
C527, 528	ECBT1C562KR5	16V 5600P
C529, 530	ECQB1H273JF3	50V 0.027U
C531, 532	ECBT1E103ZF	25V 0.01U
C533, 534	RCE1CKA100BG	16V 10U
C536	ECBT1H104ZF5	50V 0.1U
C537, 538	RCE1CKA100BG	16V 10U
C551, 552	RCE1HKA3R3BG	50V 3.3U
C553, 554	ECBT1H101KB5	50V 100P
C555, 556	ECBT1H221KB5	50V 220P
C557, 558	ECBT1E103ZF	25V 0.01U
C559, 560	RCE1CKA100BG	16V 10U
C563	ECEA1HSN010B	50V 1U
C581-584	RCE0JKA101BV	6.3V 100U
C601, 602	ECEA1HKN3R3B	50V 3.3U
C603, 604	ECBA1H681KB5	50V 680P
C605, 606	ECEA1JU220	63V 22U
C607, 608	ECCR1H100K5	50V 10P
C609, 610	ECBT1H151KB5	50V 150P
C611, 612	ECQV1H473JM3	50V 0.047U
C613, 614	ECBA1H681KB5	50V 680P
C615	ECA1HM470B	50V 47U

Ref. No.	Part No.	Values & Remarks
C616	ECEA2AU100	100V 10U
C617	ECEA1JU220	63V 22U
C618	ECEA2AN2R2SB	100V 2.2U
C619	ECBT1H102KB5	50V 1000P
C621, 622	ECEA2AU100	100V 10U
C651, 652	ECEA1HKN3R3B	50V 3.3U
C653, 654	ECBA1H681KB5	50V 680P
C655, 656	ECEA1JU220	63V 22U
C657, 658	ECCR1H100K5	50V 10P
C659, 660	ECBT1H151KB5	50V 150P
C661, 662	ECQV1H473JM3	50V 0.047U
C663, 664	ECBA1H681KB5	50V 680P
C665	ECA1HM470B	50V 47U
C666	ECEA2AU100	100V 10U
C667	ECEA1JU220	63V 22U
C668	ECEA2AN2R2SB	100V 2.2U
C669	ECBT1H102KB5	50V 1000P
C671, 672	ECEA2AU100	100V 10U
C681, 682	ECEA1HN100SB	50V 10U
C685	ECBT1E103ZF	25V 0.01U
C691	ECKT1H101KB	50V 100P
C701	ECBT1E103ZF	25V 0.01U
C702	ECQE2104KF3	250V 0.1U
C703, 704	ECES1K752VUX	75V 7500U ⚠
C705, 706	ECA1HM332B	50V 3300U ⚠
C707	ECA1VM101B	35V 100U
C708	ECKR1H103ZF5	50V 0.01U
C709	ECEA1CKA330B	16V 33U
C710	ECBT1E103ZF	25V 0.01U
C711	ECKR1H103ZF5	50V 0.01U
C712	ECEA1HKA100B	50V 10U
C713	ECKR1H103ZF5	50V 0.01U
C714	RCE1CKA470BG	16V 47U
C715	RCE1CKA101BV	16V 100U
C721, 722	ECQE2104KF3	250V 0.1U
C751	ECKWNS102MBM	400V 1000P ⚠
C752	ECKR1H103ZF5	50V 0.01U
C753	ECA1EM102B	25V 1000U ⚠
C754	ECBT1E103ZF	25V 0.01U
C755	RCE1CKA470BG	16V 47U
C756	ECBT1E103ZF	25V 0.01U
C758	RCE1AKA101BG	10V 100U
C771	ECEA1HKA2R2B	50V 2.2U
C772	RCE1CKA100BG	16V 10U
C773	ECBT1E223ZF	25V 0.022U
C774	RCE0JKA221BV	6.3V 220U
C901	ECA0JM102B	6.3V 1000U
C902, 903	ECBT1E103ZF	25V 0.01U
C904	ECA0JM471B	6.3V 470U
C905	ECBT1E103ZF	25V 0.01U
C906	ECA0JM471B	6.3V 470U
C908	ECBT1E103ZF	25V 0.01U

Ref. No.	Part No.	Values & Remarks
C909-912	ECEA1HKA220B	50V 22U
C913, 914	RCE1VKA100BG	35V 10U
C916	ECEA1HKA010B	50V 1U
C919	ECBT1E103ZF	25V 0.01U
C920	ECEA1HKA010B	50V 1U
C921-927	ECBT1H331KB5	50V 330P
C929	ECBT1H101KB5	50V 100P
C939	ECBT1H101KB5	50V 100P
C941	ECBT1E223ZF	25V 0.022U
C942	ECBT1E103ZF	25V 0.01U
C943	ECBT1H101KB5	50V 100P
C944	ECBT1H100JC5	50V 10P
C946	ECBT1H101KB5	50V 100P
C951, 952	ECBT1H221KB5	50V 220P
C953	ECBT1H331KB5	50V 330P
C1001, 1002	ECEA1HKA010B	50V 1U
C1003, 1004	RCE1HKA3R3BG	50V 3.3U
C1005	ECEA1HKA010B	50V 1U
C1007	ECFR1E223KR	25V 0.022U
C1008	ECFR1E473KR	25V 0.047U
C1009	RCE0JKA221BV	6.3V 220U
C1010-1013	RCE1CKA100BG	16V 10U
C1014	RCE0JKA221BV	6.3V 220U
C1015, 1016	ECQV1H104JM3	50V 0.1U
C1017	RCE1HKAR47BG	50V 0.47U
C1018	ECEA1VKA4R7B	35V 4.7U
C1019	RCE1HKAR47BG	50V 0.47U
C1020	ECEA1VKA4R7B	35V 4.7U
C1021	ECEA1HKAR15B	50V 0.15U
C1022	RCE1HKA3R3BG	50V 3.3U
C1023, 1024	ECQV1H154JM3	50V 0.15U
C1025	RCE1HKA3R3BG	50V 3.3U
C1026	ECEA1HKAR15B	50V 0.15U
C1027	ECEA1VKA4R7B	35V 4.7U
C1028	RCE1HKAR47BG	50V 0.47U
C1029	ECEA1VKA4R7B	35V 4.7U
C1030	RCE1HKAR47BG	50V 0.47U
C1031, 1032	ECQV1H104JM3	50V 0.1U
C1033	RCE0JKA470BG	6.3V 47U
C1034	ECQV1H474JM3	50V 0.47U
C1035	ECBA1H681KB5	50V 680P
C1036-1038	ECBT1H101KB5	50V 100P
C1039	RCE1CKA101BV	16V 100U
C1040	RCE1CKA100BG	16V 10U
C1041	ECBT1E103ZF	25V 0.01U
C1051	ECEA1HKA2R2B	50V 2.2U
C1052	ECEA1HKA010B	50V 1U
C1053	RCE1HKA3R3BG	50V 3.3U
C1054	RCE0JKA221BV	6.3V 220U
C1055	ECEA1HKA010B	50V 1U
C1056	ECFR1E563KR	25V 0.056U
C1057	ECFR1E152KR	25V 1500P

Ref. No.	Part No.	Values & Remarks
C1058	ECFR1E563KR	25V 0.056U
C1059	RCE1CKA101BV	16V 100U
C1060	ECBT1E223ZF	25V 0.022U
C1062	ECBT1E223ZF	25V 0.022U
C1063	RCE1CKA101BV	16V 100U
C1065	ECBT1C472KR5	16V 4700P

Ref. No.	Part No.	Values & Remarks
C1067, 1068	ECBT1C152KR5	16V 1500P
C1072	ECEA1HKA010B	50V 1U
C1073, 1074	RCE1CKA100BG	16V 10U
C1081	ECEA1HKA010B	50V 1U
C1082	ECBT1E223ZF	25V 0.022U
C1151	ECEA1HKA010B	50V 1U

Ref. No.	Part No.	Values & Remarks
C1152	ECFR1C683KR	16V 0.068U
C1153	ECFR1C273JR	16V 0.027U
C1154	ECEA1VKA4R7B	35V 4.7U
C1155-1157	ECBT1E103ZF	25V 0.01U

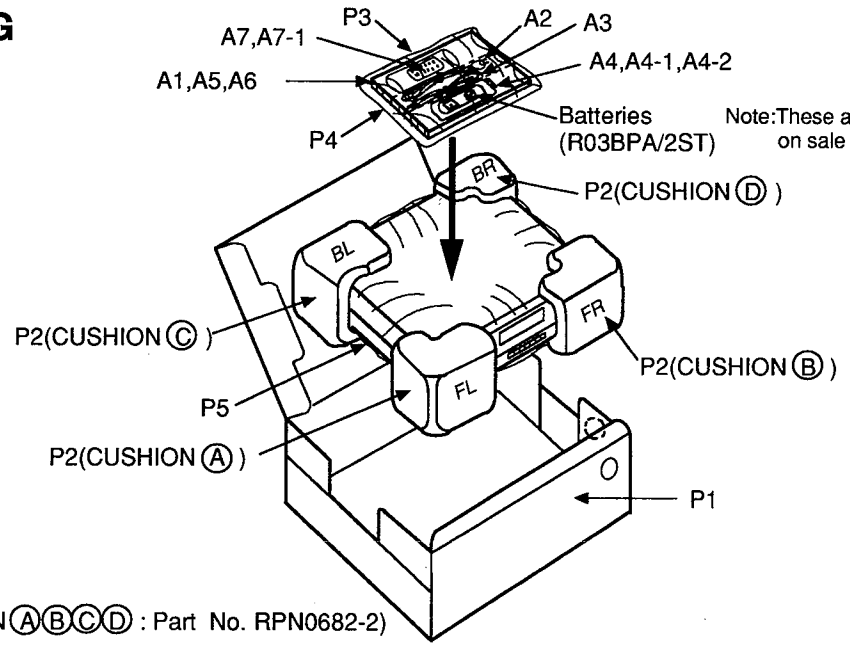
■ REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Remote Control Ass'y: Supply period for three years from termination of production.
*The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks
		PACKING MATERIAL	
P1	RPG2458	PACKING CASE	
P2	RPN0682-2	CUSHION	
P3	RPQ0164	PAD(ACCESSORIES)	
P4	RPF0139	PROTECTION BAG(ACCESSORIES)	
P5	SPP730	PROTECTION BAG(UNIT)	
		ACCESSORIES	
A1	RFKSAGX690P	INSTRUCTION MANUAL ASS'Y	(P)
A1	RFKSAGX690PC	INSTRUCTION MANUAL ASS'Y	(PC)
A2	SJA172	AC POWER SUPPLY CORD	⚠(SF)
A3	RSA0006	FM INDOOR ANTENNA	
A4	RSA0010	AM LOOP ANTENNA SET	
A4-1	RMN0244	AM ANTENNA HOLDER	
A4-2	XTN3+12AFZ	SCREW	
A5	RQCB0391	SERVICENTER LIST	(P)

Ref. No.	Part No.	Part Name & Description	Remarks
A5	SQX9131	SERVICENTER LIST	(PC)
A6	RQA0085	WARRANTY CARD	(P)
A6	SQX7183	WARRANTY CARD	(PC)
A7	RAK-SA603MH	REMOTE CONTROL TRANSMITTER	
A7-1	RKKD020-K	BATTERY COVER	FOR R/C TRANSMITTER
		<GREASE OR JIG/TOOL>	
		TEST DISC	
SA1	SZZP1056C	UNEVEN TEST DISC	
		TEST TAPE	
SA2	QZZCLA	DISTORTION ADJUSTMENT	
		GREASE	
SA3	RFKX0002	COMPOUND GREASE	

■ PACKAGING



(CUSHION ⒶⒷⒸⒹ : Part No. RPN0682-2)

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